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TIWAC

Teaching In-Water Confidence for Physical Education and Health classes

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Examiner: Karin Grahn

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Abstract

The objective of this study is to test and evaluate the efficiency of the Teaching In-Water Confidence (TIWAC) learning method originally presented in *Vattenvana* (Håkman, 2015) in a full class teaching scenario, in order to develop a framework for adaptation of the method to a large group of students with varied levels of water experience and swimming proficiency. Results from the practical implementation of a development plan for practical exercises created through student collective co-construction form the basis for evaluation of the benefits to the method, following the guidelines of Action Research.

The study is a qualitative, constructivist Action Research study, using the 5 Steps model for TIWAC as a basis for the student collective co-construction of a development plan for in-water learning tailored to the collective and individual requirements of the students, in order to generate data for the evaluation of the benefits to the TIWAC method, and the outlining of a framework for adaptation to large student groups with varied levels of in-water confidence.

To resemble a full class in-water learning scenario, a second grade elementary school class consisting of 22 students with various ethnical backgrounds was selected to participate in collaboration with their teacher. Data was collected from informal group discussions during the co-construction sessions, as well as in the form of observations during the practical implementation in the swimming pool.

The study reaffirms the potential of the TIWAC method, emphasizing the diversity and applicability of the method for confidence and proficiency building in-water teaching and learning in the subject of Physical Education and Health. Valuable benefits to TIWAC have been discovered in the balance of confidence and skill, the connection between enjoyment and success and the importance of foundational skills as cornerstones to functional technique. A proposed framework for the use of the TIWAC method in approaching a full class context is outlined. The framework allows teachers in Physical Education and Health to utilize the TIWAC method to promote success in their own in-water teaching scenarios through the 5 Steps, co-construction and cyclical work, and to facilitate a customized learning environment following the guidelines for levels and level-appropriate group formations, water depth and variety, as well as the teachers' role.

Sammanfattning

Syftet med studien är att pröva och utvärdera effektiviteten av inlärningsmetoden för Teaching In-Water Confidence (TIWAC) som först presenterades i Vattenvana (Håkman, 2015) i ett helklassutbildningsscenario, för att utveckla ett ramverk för anpassning av metoden till stora elevgrupper med varierade nivåer av vattenvana och simkunskap. Resultaten från den praktiska implementeringen av en utvecklingsplan för praktiska övningar, som skapats genom elevgemensam samkonstruktion, utgör grunden för utvärdering av fördelar med metoden, enligt riktlinjerna för Action Research.

Studien är en kvalitativ, konstruktivistisk Action Research studie, som använder 5-Stepsmodellen för TIWAC som grund för den elevgemensamma samkonstruktionen av en utvecklingsplan för inläring i vatten skraddarsydd till elevernas gemensamma och individuella behov, för att generera data för utvärdering av fördelarna med TIWAC metoden och vidare skapa ett ramverk för anpassning till stora studentgrupper med varierade nivåer av vattenvana.

För att efterlikna ett helklassinläringsscenario valdes 22 elever från en årskurs 2 klass med varierade etniska bakgrunder ut att delta i studien i samarbete med deras lärare. Data samlades in från informella gruppdiskussioner under samkonstruktionstillfällena, samt genom observationer under praktisk implementering i simhallen.

Studien stärker ytterligare TIWAC-metodens potential, och betonar mångsidigheten och anpassningsbarheten hos metoden för självförtroende- och färdighetsbyggande vattenutbildning och inläring i ämnet Idrott och Hälsa. Värdefulla fördelar med TIWAC har upptäckts i balansen mellan självförtroende och färdighet, kopplingen mellan glädje och framgång och vikten av grundläggande färdigheter som grunden till funktionell teknik. Ett förslag till ett ramverk för användning av TIWAC-metoden i helklassammanhang har utarbetats. Ramverket tillåter lärare i Idrott och Hälsa att använda TIWAC-metoden för att skapa framgång i deras egna vattenutbildningsscenario genom de 5 Stegen, samkonstruktion och cykliskt arbete, och att skapa en anpassad inlärmingsmiljö enligt riktlinjerna för nivåer och nivå-anpassade gruppformationer, vattendjup och variation, samt lärarens roll.

Contents

1. Introduction	1
1.1. Objective.....	2
1.2. Overview of thesis.....	2
2. Theoretical approach	3
2.1. Vattenvana – the original study.....	3
2.2. Didactics for in-water learning.....	4
2.3. Constructivism for in-water learning and the zone of proximal development.....	5
2.4. Summary of theoretical approach.....	7
3. Method	8
3.1. Selection and ethics.....	8
3.2. Action Research.....	8
3.3. Framework for implementation.....	10
3.4. Co-construction of practical exercises.....	11
3.5. Data production and analysis.....	12
3.6. Data processing.....	13
3.7. Subjectivity.....	13
4. Results	15
4.1. Cycle 1.....	15
4.1.1. Co-construction of practical exercises.....	15
4.1.2. Implementation of development plan for practical swim teaching.....	16
4.1.3. Development plan analysis.....	20
4.2. Cycle 2.....	21
4.2.1. Co-construction of practical exercises.....	21
4.2.2. Implementation of development plan for practical swim teaching.....	23
4.2.3. Development plan analysis.....	27
5. Discussion	29
5.1. Benefits of Teaching In-Water Confidence.....	29
5.2. Approaching a full class context.....	31
5.2.1. Utilizing the method to promote success.....	31
5.2.2. Facilitating a customized learning environment.....	32
5.3. Concerns and limitations.....	35
5.4. Method discussion.....	36
6. Conclusion	37
7. References	39
8. Appendix	41
8.1. The 5 Steps model.....	41
8.2. Plan of practical exercises (Cycle 1).....	45
8.3. Plan of practical exercises (Cycle 2).....	48

1. Introduction

Developing the ability to swim in order to stay safe in and around water is one of the main objectives for Physical Education and Health in Swedish schools, where the standard achievement of proficiency is for students to be able to swim 200 meters, 50 of which in a backstroke position (Skolverket, 2011). Swedish Lifeguard Association (SLS) maintains that an active process of working with water-related confidence and safety in schools is a valuable, fundamental base for ensuring their long term goal of reducing and eventually eliminating cases of drowning in Sweden (SLS, 2014).

Based on safe practice and necessary precautions, water is on the other hand a great medium for the physical exploration and personal growth of students of all ages and levels of proficiency. For the benefit and enjoyment of all practices concerning water, the concept of in-water confidence is a vital foundation; the promotion of the joyful aspects of in-water practices can open for students to challenge their ideas and conceptions of water in the process of building a working knowledge of foundational skills and abilities, in turn generating the experiences that form and shape their relationship with the medium (Sjödin, 2008; Håkman, 2015). A learning program specifically created to induce confidence and safety through enjoyable experiences, allowing students to progress and develop their abilities at their own pace, on an individual appropriate level in a teacher-supported learning environment, can be a valuable tool for the promotion of in-water confidence and swimming proficiency in the subject of Physical Education and Health (Håkman, 2015).

My previous study (Håkman, 2015) outlined a method for confidence building in-water practice and swim learning suited for students with low levels of water experience and swimming proficiency, based on an adaptation of *Svenska Livräddningssällskapets Tolkning av Simning Och Livräddning I LGR11* (SLS, 2014), applied to a constructivist working process based on the research of Vygotsky (1978), Piaget (1967), Von Glasersfeld (1995; 1998) and Holmes et. al. (2001), adapted in the practical form of student collective co-construction. The method was tested through practical implementation – following the qualitative, cyclical process of Action Research as proposed by Kemmis and McTaggart (2005) – in a learning scenario with six students who had been unable to meet the basic requirements for swimming in the Physical Education and Health subject. Initially, the students indicated and demonstrated very low levels of in-water confidence and swimming proficiency. After the implementation of two consecutive cycles of co-construction and in-water practice, the students' confidence as well as their proficiency levels had increased significantly; by the end of the project the students were all able to swim. In addition, three of the students were able to pass the swim test requirements. The group of students had benefited strongly from the project, building healthy attitudes towards water and safe foundations of skill and knowledge, the essential components of in-water confidence.

An implication considered in the final part of that study was that despite the promising results, the validity of the method was limited to learning projects for only a handful of students. The time spent on each student was seen to be in direct connection with the overall time span required for the successful learning, which poses the question of how a large student group would be affected in a case where the time spent with each individual student is cut short. It was noted, on the other hand, that the method and the learning model as such, is dynamic and customizable, designed to fit the individual and to be adapted to the specific purpose. On this note, the potential of the learning model is not yet thoroughly investigated (Håkman, 2015).

In order to explore the extended possibilities of the model, here named Teaching In-Water Confidence (TIWAC), this study intends to replicate the original study of *Vattenvana* (Håkman, 2015) in a full class Physical Education and Health teaching context, to validate the method for the teaching and learning in large groups. Furthermore, the objective is to propose and develop a framework for adaptation of the TIWAC method to group collective teaching of students with varied levels of water experience and proficiency. The theoretical basis for this study is constructivism (Vygotsky, 1978; Piaget, 1985; Wood et. al. 1976; Von Glasersfeld, 1995; 1998; Holmes et. al., 2001), adapted as a co-construction working process following the outline from the original study *Vattenvana* and the same cyclical sequencing of Action Research (Kemmis and McTaggart, 2005).

1.1. Objective

The objective of the study is to test and evaluate the efficiency of the Teaching In-Water Confidence (TIWAC) learning model in a full class teaching scenario, and to develop a framework for adaptation of the method to a large group of students with varied levels of water experience and swimming proficiency. Results from the practical implementation of a development plan for practical exercises created through student collective co-construction form the basis for evaluation of the benefits to the method, following the guidelines of Action Research.

1.2. Overview of thesis

The original study of *Vattenvana* is briefly described, followed by a theoretical discussion of in-water learning didactics, constructivism and zone of proximal development thinking. The method is presented including ethics, the Action Research process, the outline for co-construction and data production and analysis. The results are presented in the form of qualitative descriptions based on student discussions and observations divided into two cycles of implementation including separate development plan analysis sections. The discussion presents benefits of Teaching In-Water Confidence and implications for approaching a full class context, followed by concerns and limitations regarding the study. The conclusion summarizes main findings in terms of valuable benefits to the application of the TIWAC method to a full class context, and proposes a framework for the use of the TIWAC model in Physical Education and Health practices.

2. Theoretical approach

2.1. Vattenvana – the original study

The purpose of my previous study (Håkman 2015) was to create a method that would allow students with little experience of water, and low confidence in and around water, to be able to accustom themselves to the medium while developing necessary foundational skills such as floating and treading water, among others. With a constructivist approach the students were able to control their learning situation within a set procedural structure open for adaptation to their individual needs and requirements. The central concepts of the method were set around the 5 Steps model, adapted from SLS *Tolkning av Simning Och Livräddning I LGR11* (SLS, 2014), and the student collective process of co-construction (Håkman, 2015).

The method derives from the 5 Steps model (see 8.1. Appendix), which centers on developing in-water confidence; the inner feeling of security, based on water awareness and foundational, functional skills to match. The model features carefully structured guidelines and progression based on successive, step by step learning, ranging from the very basics of first time water ventures to advanced swimming, and ultimately life-saving proficiency. Each one of the 5 steps represent developmental stages relative to a certain water depth or a particular form of in-water practice (Håkman 2015).

Through the practice of co-construction which followed 7 main points of discussion (see 3.4. Co-construction of practical exercises), the students' levels of in-water confidence and swimming proficiency were outlined in terms of their previous experiences and attitudes towards water, in order to lay the ground work for the student collective process of producing a development plan for their learning. The 5 Steps model was utilized by the students as the basic material for level estimation, the selection of appropriate skills and progression as well as technical guidelines, which in the process of co-construction were adapted and tailored to suit the students' needs and requirements. The final result was a plan of practical exercises which was implemented and tested during a session in the pool. Thereafter, the plan was analyzed and subjected to revision and improvement according to the students' progress, during the following co-construction session. Following the process of Action Research, the project continued in subsequent cycles until the target goal for student development was met, or for a desired span of time, in which the development plan evolved with the students from one level to the next (Håkman 2015).

The main findings in the study, showing the benefits of the method, are presented below:

- The right method for the right student
- The students' control over their own learning situations
- The playful approach
- Support and guidance in the zone of proximal development (Vygotsky, 1978)

The collective outlining of the students' in-water confidence in combination with the great variety of the development plan in terms of exercises and progressions, and the students' own investment in the co-construction process, opened the possibility for every student to find their own suitable way of learning.

As the students decided the content and structure of their learning scenario and further had the possibility to make changes and improvements as the project went on, they were able to relax and enjoy their learning process to a full extent, progressing at their own pace without the pressure of achieving specific results.

The joyful learning approach emphasized the students' positive experiences and their exploration of the effects of the water.

With the help of practical devices, manual hands-on teacher support, and thorough detailed explanations, the students received extensive individualized support throughout the entire learning process. The social interplay of the student group contributed to motivation and inspiration, which encouraged the students to challenge themselves in the company of the group. The students benefited in various individual ways from different aspects of the support and the learning progressions, but the success of their accomplishments in the form of newfound in-water confidence and the ability to swim, as well as the accompanying joy, was experienced collectively in the group (Håkman 2015).

2.2. Didactics for in-water learning

The development of in-water confidence and swimming proficiency requires a didactical approach of clearly structured methodology, sufficient time for learners to adjust and adapt, as well as a knowledgeable teacher with experience in the subject. In order for students of all backgrounds to be able to benefit from in-water learning scenarios – regardless of their previous relations to water or current level of proficiency – it is of great importance for the teachings to be adapted to fit the students' needs and requirements. According to Sjödin (2008), in-water confidence is a deciding factor for the development of swimming proficiency. Promoting in-water safety, and the feeling of security for students learning to swim means a progressive, step by step process with extended focus on allowing students to experience the positive effects of the water, such as freedom of movement and a heightened sense of body control and awareness. Sjödin stresses the importance of allowing students to play and have fun as a part of the education, further emphasizing the promotion of a joyful learning environment adapted to the students' individual prerequisites, needs and experiences as a main component in applying the right method to the learning of every individual student (Kraepelien-Strid, 2007).

In order for the learning process to be successful sufficient time should be allowed for every student to develop confidence and skill at their own pace; for learners to experience their success in the water can be very beneficial for a continuously positive learning curve, as well as the strengthening of their self-esteem. The knowledge and experience of the teacher has great impact on assuring the promotion of an efficient student learning progress according to Kraepelien-Strid (2007), providing the students with appropriate conditions for the development of in-water confidence and swimming proficiency. In order for swim learning and in-water learning to be possible, thorough planning in the form of step by step outlines for student progression is required, where partial goals are set to build up towards main goals (Kraepelien-Strid, 2007; Sjödin, 2008).

For the purpose of effectively adapting in-water learning methods to a range of situations and requirements Sjödin (2008) exemplifies collective, split and mixed method options as beneficial in different learning scenarios. The collective method is intended for the direct practice of collective in-water movements, such as breast- or backstroke swimming, allowing

for students to get a sense of the movement pattern and its intended use. The split method emphasizes independent practice of the individual components, deconstructing the full complex movement in order to simplify the learning and allow for more precise technical practice. The mixed method combines elements from the collective and the split method to open for a diverse learning pattern allowing students to experience their progress working interchangeably with the collective movements and relevant technical splits to adjust and adapt their techniques throughout the learning process, building towards complete proficiency.

In the reasoning of Sjödin (2008) and Kraepelien-Strid (2007) there is a unison agreement as to the key to successful development of in-water confidence and swimming proficiency being continuous practice. Providing students with the opportunity to spend good amounts of time playing, exercising and practicing swimming enhances their chances of success in terms of developing valuable knowledge, confidence and skill impacting their in-water safety, enjoyment and proficiency as swimmers.

2.3. Constructivism for in-water learning and the zone of proximal development

The constructivist view is described by Naylor and Keogh (1999) as a learner-active process where individuals make meaning of the new in relation to the old, continuously adapting and reforming their bank of knowledge by connecting new insights with existing knowledge. This contradicts the notion of knowledge as a passively transmitted entity relying explicitly on the sender-receiver relationship. Instead, the process of knowledge building is viewed as based on the individual's innate capability of creating sustainable ideas through testing; individuals construct their working knowledge in relation to others and their surroundings, in order to adapt to the present context (Von Glasersfeld, 1998).

According to Piaget (1967), widely entitled as the founder of constructivism, knowledge is directly correlated to action; the ability of processing new ideas, impressions or experiences through assimilation and contextual adaptation. Piaget further elaborates on the human understanding and view of the world as in a process of constant change, where novelty continuously ignites reevaluation and reconstruction of the notion of reality (Piaget, 1967; 1970). This is a foundational principle of constructivism coined by Piaget (1985) as the equilibration theory; based on reconstruction and reevaluation of existing cognitive structures, knowledge equilibration is a self-regulating process that can be stimulated for learners in the creation of learning environments, inspiring collaborative work, problem solving and cognitive conflict. De Lisi and Goldbeck (1999) continue the reasoning on the notion of equilibration, suggesting that learning can take place through assimilation in independent student practice, with relevant support in the form of modeling or guidance, as well as through student collective learning, where students engage in cooperative problem solving.

Along the lines of social constructivism the reasoning of Von Glasersfeld (1998) coincides with that of Vygotsky (1978) in regarding learning as a social process where cognitive changes are in close relation with social interactions. Von Glasersfeld (1995; 1998) defines knowledge as a personal affect, constructed on the basis of individual experiences through the process of assimilation to an existing cognitive structure; new experiences stimulate learning provided that a certain change correlates with a predetermined result, allowing the existing patterns to merge with the new.

According to Vygotsky (1978), the prerequisite for learning is a collaboration and exchange between a learner and others within the frame for the present potential of development for the individual – the zone of proximal development. The notion of learning is centered on activity, accounting for meaning making through social relations. In the following quote, Vygotsky further elaborates on the definition of zone of proximal development learning:

...the distance between the actual developmental level as determined by independent problem solving and the actual level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978, p. 86).

Assisted by another individual in possession of the desired knowledge, the learner can make progress within the zone of proximal development through what Vygotsky developed and Wood et. al. (1976) terms *scaffolding*; a supporting teacher or friend can guide the learner from the point of an assisted to an unassisted accomplishment (Wood et al. 1976; Vygotsky, 1978). Wood et. al. describe stimulating learners' interest in the task at hand, simplifying and demonstrating tasks, and placing emphasis on important factors to aid problem solving, as principles that apply to effective scaffolding. Active student participation is a basic requirement according to Dysthe (1995) who continues the outlining of scaffolding principles, exemplifying traits of effective tutoring as quick interaction, direct feedback, individually and situationally appropriate guidance and encouragement, as well as positive stimulation of learner reflection and problem solving. Essentially, attempts to support or guide students should be based on the effort to aid their successive development step by step, as if moving up a staircase (Crain, 2010).

Hogan and Tudge (1999) elaborate on Vygotsky theories as closely bound to interactions in a specific cultural environment, where the zone of proximal development is regarded as the social context allowing for knowledge building and learning through peer collaboration, as also proposed by Gillen (2000).

It is important to clarify that the zone of proximal development is to be considered an active process rather than a mindset (Newman and Holzman, 1993). In regards of group work, the notion of zone of proximal development does not concern knowledge as strictly individual, simply passed on from one person to the next (Radford and Roth, 2011). Instead it is regarded as a dynamic, collective connection of shared consciousness; i.e. meaning is made by individuals working together, with the use of communicative and corporate means (Roth and Radford, 2010). Possibilities for learning occur and become available as learners take actions, reflect on their situations and live their experiences in a specific context (Roth and Radford, 2010). Meaning making within a zone of proximal development is dependent on active agreement regarding the perception or execution of something particular to a specific context (Radford and Roth, 2011). The exchange between the apparent teacher and learner builds on their mutual communication (Roth and Radford, 2010;), which opens for progress within the zone of proximal development as knowledge arrives through action, and in turn, reactions of mutual understanding and agreement (Roth and Lee, 2007). For the purpose of learning, students should not be seen as in permanent relations of experts and novices – although learning does derive from such asymmetrical relationships – as they can interchangeably take the roles of teachers and learners through their actions in the common context in order to reach collective agreements, engaging in multidimensional learning. The uneven distribution of knowledge alone, on the other hand, does not necessarily equal or guarantee learning (Roth and Radford, 2010; Radford and Roth, 2011).

A solid point of departure for any constructivist learning process is in the thorough, extensive knowledge of the student, in order to understand and acknowledge their prerequisites for learning as well as their relation to the learning object (Dysthe, 1995). Allowing for a collective engagement in the design of the learning process, students can be given the opportunity to personalize and adapt the learning to fit their needs. Situated in a safe and secure confidence-inducing environment where students have the possibility to learn within their personal zones of proximal development, new experiences can restructure, develop and define their relationships to a certain medium (Dysthe, 1995; Imsen, 2000; Säljö, 2005). The significance of a student collective constructivist approach to learning is defined below, in the words of Holmes et. al. (2001, p. 4):

What we argue for is a communal constructivism where students and teachers are not simply engaged in developing their own information but actively involved in creating knowledge that will benefit other students. In this model students will not simply pass through a course like water through a sieve but instead leave their own imprint in the development of the course, their school or university, and ideally the discipline.

2.4. Summary of theoretical approach

My original study of *Vattenvana* (Håkman, 2015) provides a scientific background for the process of this study and the extended evaluation of TIWAC method. The didactical approach to in-water learning used in this study is based on the concepts developed for swim teaching by Sjödin (2008) and Kraepelien-Strid (2007). The theory of constructivism includes the key concepts of student inclusive, collaborative work as discussed by Von Glasersfeld (1995; 1998) and Piaget (1967), as well as zone of proximal development thinking in terms of scaffolding as proposed by Vygotsky (1978) and Wood et. al. (1976) and intergroup students relations as discussed by Roth and Radford (2010), Radford and Roth (2011) and Roth and Lee (2007). Throughout this study, these concepts are considered, and support the qualitative results as argued for in the discussion.

3. Method

In order to test and evaluate the efficiency of the Teaching-In Water Confidence (TIWAC) learning model applied to a full class teaching scenario, and allow for the inclusion of the main component of student collective co-construction and a series of practical implementations, the method adopted to make up the framework was a qualitative, constructivist Action Research study. The 5 Steps model (see 8.1. Appendix), containing level-relevant skills, abilities, exercises and target goals for development, served as a point of departure for the co-construction of a development plan including practical exercises tailored to suit the specific collective and individual needs and requirements of the students, and furthermore as a basis for student self-reflection and the practical learning in the pool.

In order to generate sufficient data in the form of observations from the process of working with the TIWAC method, allowing for a discussion evaluating the benefits to the method and the outlining of a framework for adaptation to large students groups with varied levels of water experience and swimming proficiency, the study was carried out according to the Action Research spiral (see Figure 1), following the 6-step process for Action Research. The study results are presented sequentially following the same structure, including detailed observations and reflections from the co-construction as well as the practical swim sessions. The discussion presents the important findings based on the results divided into two main topics: Approaching a full class context and Benefits to Teaching In-Water Confidence.

3.1. Selection and ethics

For the study to capture the essence of a full class in-water learning scenario, a second grade, elementary school class consisting of 22 students with various ethnical backgrounds was selected to participate, in collaboration with their teacher. The class was chosen on the basis of availability for participation as well as on the accessibility of the school due to its geographical location.

All students and parents were initially, in collaboration with the class teacher, informed of the proceedings of the study in the form of an invitation featured in the weekly class newsletter. Participation was presented as extracurricular and strictly voluntary; the participants and their parents were given the option to withdraw at any point of the study. In order for the study to proceed the collective parental request for the full anonymity of the participating students was granted. No names, personal information, or other data that could be used to identify the participants have been included in the documentation. In writing the participants are strictly referred to as 'student' or 'students'. The information presented in the study has only been used for research purposes.

It is not in the interest of this study to categorize students. For the purpose of the study no distinction of gender or ethnicity has been made, in order to demonstrate the universal applicability of the TIWAC method as neither culture- nor gender-specific. This also serves to ensure the full anonymity of the students.

3.2. Action Research

In order to be able to work with co-construction based learning models, a research method open for student-teacher collective work in creating a development plan for in-water learning suitable for a large group of students with varied levels of experience and proficiency was

required. Action Research allows for a structured process of planning, implementation, reflection and revision in work with progressive in-water learning through a development plan of practical exercises, following the process detailed in Figure 1 in order to customize and individualize the learning model.

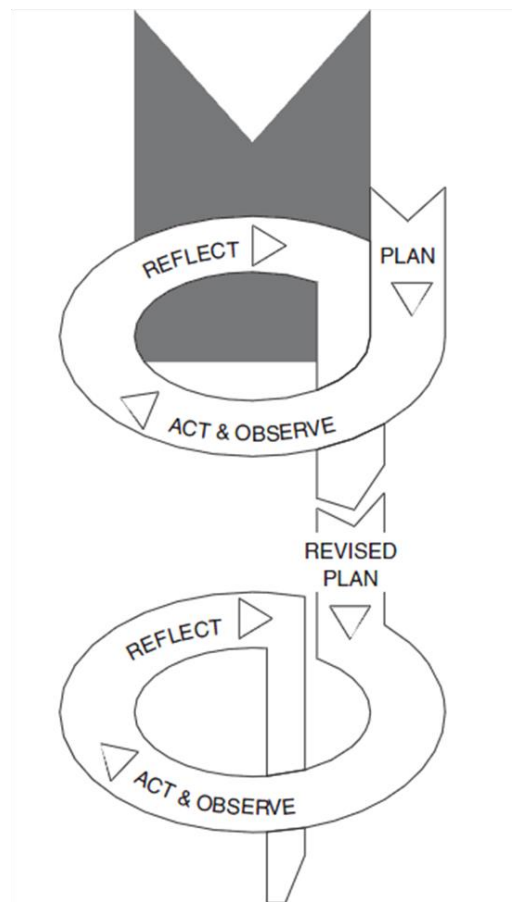


Figure 1: The Action Research spiral (Kemmis and McTaggart, 2005, p. 278)

Levin is regarded as the founder of Action Research (Adelman, 1993; Kemmis and McTaggart, 2005), a method developed by a range of scientists into a variety of similar scientific methods centered around self-reflection and a continuous development of practice applicable to educational work as well as social organizations (Kemmis and McTaggart, 2005). The objective for educational purposes is to provide a valid link between theory and practice in order to rationalize and justify the actions taken and methods used by teachers through a method designed for scientific testing of theories and concepts. The process allows teachers to work together with their students, forming a thorough understanding of their practices while opening possibilities for improvement and development (Kemmis and McTaggart, 2005; Carr and Kemmis, 1986; O'Brian, 1998).

Kemmis and McTaggart (2005) describe the process of Action Research as a spiral connecting planning, action, observation and reflection in a continuous cyclical flow of self-reflection (see Figure 1). In the context of a classroom the process is practical, taking the form of a qualitative research method relying on data collection and analysis in order for teachers to closely review, improve and develop their practice with the support of educational theories, adapting to circumstances encountered along the way. The following is written by Kemmis and McTaggart on the Action Research process:

The stages overlap, and initial plans quickly become obsolete in the light of learning from experience. In reality, the process is likely to be more fluid, open, and responsive (2005, p. 277).

Action Research is considered to be of great relevance in educational contexts, as a method suitable for the development of practices of teaching and learning placing emphasis on the student centered perspective as well as individual style of the teacher. The cyclical process opens the possibility for teachers to explore and prove the validity of their theories, promoting continuous development and improvement of practical educational methods (Hien, 2009).

3.3. Framework for implementation

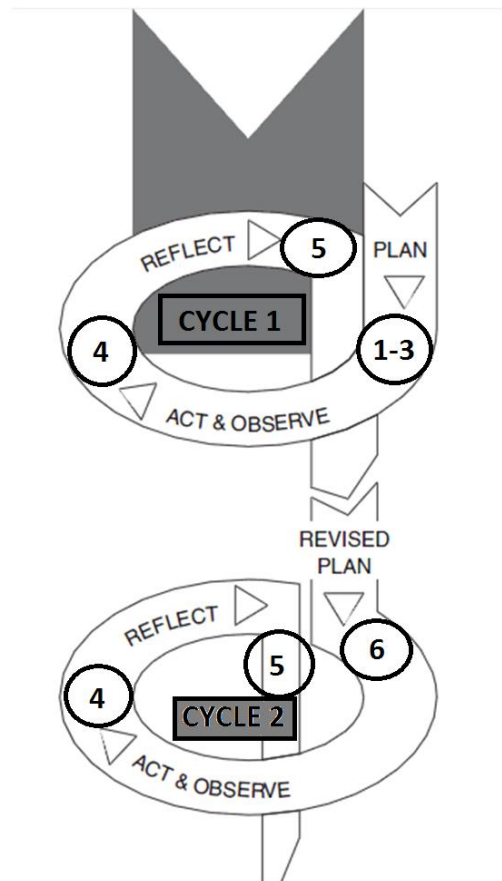


Figure 2: The Action Research spiral (Kemmis and McTaggart, 2005, p. 278)

The 6 step process of the framework for implementation of the study is presented in Figure 2. The model is based on the work process of the Action Research method, following the Action Research spiral (see Figure 1) (Kemmis and McTaggart, 2005; Efron and Ravid, 2013; Sagor, 2000). After completion of a full cycle (step 1-6), steps 4-6 of the process are repeated until the end of the project. The following 6 steps have been adapted to fit the purpose of the study:

- 1) Identify the target for development

Aim: Develop the students in-water confidence and swimming proficiency

- 2) Develop an understanding for the students' attitudes towards water and swimming.

Aim: Outline the students' current level of in-water confidence and swimming proficiency through informal talks with the students regarding their previous experiences of water and

swimming, in order to generate a basic understanding for what skills and abilities the students need to develop for further progression.

- 3) Create a development plan based on the 5 Steps model (see 8.1. Appendix) tailored to the students' needs and requests following the process for the student collective co-construction.

Aim: Produce a plan of practical exercises containing appropriate points for the development of skills and abilities of importance for the students' progression in collaboration with the students, following the process for the co-construction of practical exercises.

- 4) Implement and test the development plan in a practical swim teaching scenario.

Aim: Collect data in the form of observations, pedagogical reflections and student reflections during the practical implementation of the collectively co-constructed plan of practical exercises at the swimming pool.

- 5) Analyze the collected data and revise and improve the development plan according to newfound insights regarding factors for the adaptation of the development plan to the particular learning context, and the students' continued progression.

Aim: Evaluate the development plan, taking relevant points of the students' progression and their reflections, as well as factors for their development of skills and abilities and enhancing the potential of the learning scenario, into consideration.

- 6) Produce a new and improved version of the development plan in co-construction with the students, in preparation for the next phase of practical implementation at the swimming pool.

Aim: Develop and improve the plan of practical exercises based on the revised development plan, in co-construction with the students, in order to reach the target goals for proficiency development and motivate self-reflection among the students throughout the continued learning process.

3.4. Co-construction of practical exercises

The co-construction of practical exercises, in the form of an informal, class room group discussion, should have all participating students present, and proceeds on a clear structure of dialogue. The discussion strictly constitutes the preparatory phase of the 5 Steps (see 8.1. Appendix), where the students' level of swimming proficiency and previous experiences of water is surveyed and mapped out in order for the implementation to have a general point of departure. The development plan is presented and discussed according to the 7-point sequence of dialogue below, in order to develop a plan of practical exercises adapted to the specific needs of the students, with the aim to reach the targets goals for the estimated level of proficiency.

1. Students' relation and attitude towards water.
2. Review of development plan and practical application of the 5 Steps.
3. Students' present level of swimming proficiency.
4. What skills the students consider to be their strong/weak points.

5. What skills the students would like to improve.
6. Actual components of and target goals for the skills in question.
7. How the students would like to practice the selected skills.

The 7-point list will guide the students through the process of co-construction according to a set structure of dialogue, which leads to form a complete plan of development for practical swimming skills and exercises designed to get used to water, adapted to the students' actual level of proficiency and attitude towards water.

3.5. Data production and analysis

The 5 Steps model served as a point of departure for creation of a development plan tailored to suit the needs of the students. The Action Research process (see 3.2. Action Research) outlined the structure of the practical, student collective work in the study, in which data were collected during two cycles of Action Research. The material is presented in the results section (see 4. Results) according to the order specified below and divided into the two cycles of Action Research implemented in the study. All data was collected using methods most practical for the cause (notes and observations) during co-construction and implementation of each cycle. The data is presented in the results section (see. 4. Results) unprocessed and in its entirety, and is thereafter subject to analysis at the end of each cycle (see. 4.1.3. and 4.2.3. Development plan analysis).

At the start of each cycle the informal group discussions of the co-construction of practical exercises were held in the students' classroom to an approximate 15 minutes of length, following the 7 point structure of dialogue (see 3.4. Co-construction of practical exercises) which allowed the students to discuss the essential points of each topic openly in the group. Considering the number of students, it was not possible to take each students' specific opinion into account. However, by using hand raising for quantifiable matters and basic questions with yes/no answers, as well as the option for further questions regarding each topic, a general outline of the various levels of proficiency and in-water confidence in the class could be distinguished from the students' reasoning in order to satisfy the purpose of the informal discussions as a preparatory phase before the practical implementation. The data collected during the co-construction concerned the students' collective reasoning along each point of discussion, and were noted down briefly and later summarized as presented in the results section (see. 4.1.2. Implementation of development plan for practical swim teaching) in the form of the main points made, which formed the basis for the creation of the development plan.

During the practical swimming sessions participant observations were made simultaneous with the actual in-water teaching. The observations were written down after the session was completed, in the form presented in the results. Considering the number of students, it was not possible to see and observe everything that was taking place. The present data comprise the main observations, with a central focus on the progressive development of technical skill and in-water confidence in the form of physical actions and explicit expressions notable within the group of students throughout the practical swimming sessions.

Cycle 1

During Cycle 1 material was generated in Steps 1-3 through informal talks with the students at the first co-construction session (see 3.4. Co-construction of practical exercises), in Step 4

through participant observations during the practical implementation, and in Step 5 through a reflective analysis of the development plan (see 3.3. Framework for implementation).

- Co-construction of practical exercises

The data from the co-construction was collected by taking notes

The students' reasoning concerning the 7 points of discussion outlining the co-construction of practical exercises (see 3.4. Co-construction of practical exercises) is summarized and presented in the form of an overview of the students' present level of in-water confidence and swimming proficiency, as well as the target goals for proficiency development. The plan of practical exercises is presented, as a result of the co-construction.

- Implementation of development plan for practical swim teaching

Didactical observations concerning the students' development of in-water confidence and swimming proficiency are presented sequentially from a pedagogical point of view, regarding the students learning, in the order specified in the plan of practical exercises, with the additional inclusion of experiences and reflections from the session in the pool, as expressed by the students.

- Development plan analysis

The practical implementation of the development plan and its applicability to the teaching and learning scenario is evaluated and presented according to the students' development and valuable insights before the coming cycle of the project.

Cycle 2

During Cycle 2 material was generated in Step 6 through informal talks with the students at the second co-construction session (see 3.4. Co-construction of practical exercises), in Step 4 through participant observations during the practical implementation, and in Step 5 through a reflective analysis of the development plan (see 3.3. Framework for implementation).

- Co-construction of practical exercises

The students' revisit of the 7 points of discussion outlining the co-construction of practical exercises (see 3.4. Co-construction of practical exercises) is summarized and presented in the form of possible changes in the students' relationships to water, their reflections on their own progress, and the process of producing a modified and improved, new development plan through co-construction. The new plan of practical exercises is then presented.

- Implementation of development plan for practical swim teaching

Didactical observations concerning the students' development of in-water confidence and swimming proficiency are presented sequentially from a pedagogical point of view, regarding the students learning, in the order specified in the plan of practical exercises, with the additional inclusion of experiences and reflections from the session in the pool, as expressed by the students.

- Development plan analysis

The practical implementation of the development plan and its applicability to the teaching and learning scenario is evaluated and presented according to students' development and valuable insights before a possible continuation of the project.

3.6. Data processing

A qualitative subjective content analysis along the lines of Action Research methodology was made (see 3.3. Framework for implementation). Each cycle of implementation, from co-construction to practical implementation, forms a process for developing theories and concepts applicable to the refinement of the development plan, in the form of insights and key features that allow the actual learning scenario to progress continuously. In each section of development plan analysis the main findings regarding important aspects for the creation of a practical and relevant learning environment are presented, based on the observations of the students' progress, as well as the requirements of the group. Based on these findings, key themes for the application of the TIWAC method to a full class learning scenario are presented in the discussion in the form of the deciding factors drawn from the collected data.

3.7. Subjectivity

The findings are subjective and based on the observations that were possible to collect as a single observer simultaneously instructing and helping the students during the actual situation, and on the specific individual requirements of the students and their particular learning situation. An effort was made to conduct the actual research from an objective standpoint, with awareness of the effect expectations could have on the results of the study. The qualitative nature of the results provides useful insights into a specific learning context from which implications can be drawn to extend towards other learning scenarios. While the results should not be generalized as universally applicable, the themes presented in the discussion provide a possible framework for general application.

4. Results

4.1. Cycle 1

4.1.1. Co-construction of practical exercises

The presentation of the co-construction together with the students is based on the 7-point sequence of dialogue available in 3.4. Co-construction of practical exercises. The students' discussion of the questions is presented here in the form of their reasoning and the main points that were made.

1. Students' relation and attitude towards water.

While all 22 students had some experience of swimming in indoor pools or outdoors during summer, the class as a whole had previously never been swimming as a part of Physical Education and Health. All students showed great excitement before the upcoming trip to the swimming pool, and based on their previous experiences, a large group (18) expressed feeling confident and safe in their abilities in and around water. The remaining 4 mentioned feeling nervous and slightly insecure, explaining that they had only been swimming a few times and that deep water was intimidating. They felt safer when using flotation devices such as arm-puffs. The students enjoyed diving, swimming under the water, jumping into the water, performing tricks and swimming. They all wanted to improve their skills, and although the more insecure students expressed concerns about more advanced activities, the group was expressing great interest in trying new things.

2. Review of the development plan and how the 5 Steps can be applied practically.

The material was presented to the students, who recognized many of the games, activities and techniques for breast- and backstroke, as well as floating, in Step 1 and 2 (see 8.1. Appendix 8.1.) from swim school or elsewhere. There was general uncertainty about how to tread water. Most students were unfamiliar with the concept of in-water confidence, but further explanation had great effect on the more insecure students who liked the idea of having the plan of practical exercises tailored to their needs.

3. Students' present level of swimming proficiency.

The students reviewed the 5 Steps (see 8.1. Appendix) to familiarize themselves with the structure of the learning material. Step 1 was considered basic and fun, as the students were all used to playing in the water. The more insecure students (4) did not feel comfortable with breaststroke technique or dipping their heads under water. A slightly larger group of students (7) were unsure about jumping from the poolside, floating on their back and front, backstroke technique and treading water. The remaining 15 students considered themselves proficient in all activities and skills up to Step 4. There was a general insecurity about jumping/diving from higher platforms and swimming under water. A large part of the group also felt uncertain whether their technique was strong enough to pass the swim test requirement for Step 4.

All students were concerned with water depth, and felt more comfortable in shallow to neck-deep water. A combination of Step 1 and 2 would be suitable for development – shallow water practice with focus on movement in, under and over the water, as well as basic technique work and refinement.

4. What skills the students consider to be their strong/weak points.

Playing in the water was considered easy and fun; water orientation and basic swimming in shallow water was usually a part of the students' water activities. The more confident students mentioned diving for objects, performing forward rolls and handstands, as well as general swimming technique as their strong points. Weak points were mainly related to underwater skills; most students had a hard time holding their breath, jumping into the water without holding their noses or staying under water for long. The more insecure students did not feel confident with floating on their back or front. Many students mentioned that they found deep water balance skills, such as treading water, difficult.

5. What skills the students would like to improve.

All students wanted to get more comfortable in the water by learning to float properly and learn/improve their breast- and backstroke technique. The more insecure students also wanted to get accustomed to jumping into and diving under the water, which coincided with a general request from the whole group of learning how to hold their breath to be able to swim under the water. The confident students also wanted to practice treading water in medium deep water.

6. Actual components of and target goals for the skills in question.

Step 1 places a main focus on letting the students get acquainted with the water through easy exercises and games designed to approach the water from various angles; jumping, moving and diving. Step 2 concerns basic technique and efficiency in breast- and backstroke. Within this framework, the skills applicable to the students' needs and requests center on ways of dipping, diving, jumping from the side of the pool, floating, and improvement of breast- and backstroke. Additionally, a version of treading water in shallower depths modified from Step 3 can be beneficial for the students.

7. How the students would like to practice the selected skills.

The students collectively decided that they would like to start their practice in shallow water to familiarize themselves with the exercises. Most important, they all agreed, was to have fun together – the option of playing games in the water was applauded. A split of the lesson into sections of games and technical skill practice was decided on. The students also considered dividing the class into smaller groups to be able to play and help each other practice together.

The games would constitute the activities designed to get used to the water – jumping into and diving under the water. The technical skills were floating, treading water, breast- and backstroke. The plan of practical exercises was designed by the students collectively, with the use of Step 1 and 2 (see 8.1. Appendix) and some of my input based on the students' needs and requests (See 8.2. Plan of practical exercises for the plan developed by the students).

4.1.2. Implementation of development plan for practical swim teaching

Before the first swimming session the students were all excited. The experienced students discussed the planned exercises and all the new things they would get to try, while the rest seemed slightly nervous, being more concerned with whether there would be flotation devices, such as arm puffs, available, how the pool would look, what the water would feel like, and if there might be a risk of having water splashed in the face. They were reassured

that the water would be nice and warm, and further that they would get to practice on their own terms – deciding for themselves what they felt comfortable with, following the plan that was set up during the co-construction. During the trip to the pool the students had organized themselves into four groups of 5 and 6 respectively, including one of the inexperienced students in each group, which they all had agreed would make everyone feel safer.

Warm-up

As the students got into the water their level of in-water confidence was clearly noticeable; the majority of the class immediately started to play around with each other, but the four students without much previous experience were cautious and kept close to the pool side for comfort. Starting the warm-up the groups were assembled and started to run along the bottom end of the pool using their hands to plow through the water. At this point it was possible to distinguish three relative levels of in-water confidence in the group that coincided with their estimations of their own proficiencies during the co-construction:

- Level 1. The students who effortlessly adjusted their movements to the resistance of the water, and seemed to enjoy the water splashing all around them
- Level 2. The students who had an idea of how to make their way through the water, but with a clearly ineffective arm plow that required much effort.
- Level 3. The small group of students who were moving very cautiously with no engagement of the arms, keeping close to the pool side and away from the splashing of their friends.

Games

The students gathered in little circles and tried to blow bubbles in the water, something that all but the level 3 students were comfortable with. With the water nearly chest-deep they found it difficult to join their groups, as all groups opted to stay relatively far from the pool side. They stayed close to each other and the pool side, hesitant even to dip their chins in the water. As they were tense they were given a simple exercise to help them relax: Squeezing their shoulders up to their ears while inhaling deeply, exhaling as they let their shoulders drop. This had effect; while the rest kept on brewing coffee, or sprayed each other with water, the four students that stayed by the pool side formed their own group. The fact that they had equal levels of in-water confidence seemed to reassure them enough to blow their first bubbles, from both mouths and noses.

The next activity had the whole class play underwater guessing games; the groups had their members take turns making signs as faces under the water for the others to spot. Being submerged under water proved no less difficult for the four students than the previous exercise. After some attempts at dipping their faces, one of the students managed to get below the surface. This inspired two more, who wanted to see what their friend looked like under water. At this point the new group started to seem more relaxed, as they moved away slightly from the pool side. Only one of them had not yet mustered the confidence to dip his face in the water, and was hesitant to go far from the pool side.

Swimming and diving through hoola hoops also seemed to be much enjoyed by the level 1 and 2 students, as they experimented with various ways of swimming, diving and jumping in, out and through the hoops. The inexperienced students were excited to try, but started cautiously by just stepping through the hoop. Diving into the hoop proved more difficult for

the student who had not yet been below the surface. As one of them eventually managed to dive in and out successfully the rest quickly realized that it was possible, and expressed much joy as they approached the hoola hoop in different ways.

The student who had not managed the previous exercises showed me how they took a deep breath and plunged into the water, blowing bubbles, coming back up with an expression of pure joy. The level 3 students had now come as far as to make little attempts at picking up rings in the shallow end of the pool, while the rest of the class was diving and playing underwater treasure hunt, exclaiming that this was among their favorite things. All students had now come to the point where splashing around and staying under the water was no longer a concern, but as they moved on to try sitting or lying on the bottom of the pool it was once more made clear that there were three relative levels of in-water confidence in the class. The level 1 students had no problem using their breath control under water, while those on level 2 struggled, although not to the same extent as the level 3 students. The class was given short instructions on how to use breath control – exhaling slowly whilst going down. This had both level 1 and 2 students begin to try different positions of sitting and lying down, after which they transitioned into trying rolls and handstands. Even some of the level 3 students managed to dip down to have their behinds touch the bottom.

Jumping into the water from the side of the pool seemed to be another favorite for many of the students; the more experienced students immediately wanted to show off their tricks, such as spins and flips. A large group explained that they had to pinch their noses while jumping not to swallow water, an issue that was easily sorted out with some instructions on how to block their airways by exhaling without letting any air out. The students on level 2 experimented with jumping backwards, trying cannonballs and long jumps, noticeably extending their comfort zones. The inexperienced students now decided to rejoin their groups, taking turns to try out their jumps. Their initial attempts were on the very shallow end, as they were still careful not drop below the surface, but following the lead of their friends they took a step further out into deeper water. While being spotted by me, one student explained ‘if I jump here, I will not be able to stand’, but took the plunge all the same and managed to get back to the pool side without help. Eventually the entire class had managed to jump in where the water was close to overhead deep.

Floating in shallow water

As the following activity required some instructions – and a brief demonstration of how floating required staying relaxed – the students were rounded up and asked whether some of them felt more comfortable after the session of games. This was met by a cheer from the whole class as they raised their hands to indicate that this was the case. When asked if some of them still felt a little uncomfortable six students raised their hands. Luckily, the next activities would have them relax and enjoy the water even further.

The level 3 students opted to stay together once more. The experienced students quickly started playing around with making group formations, holding each other’s hands and feet. On the other hand, a large group of level 2 students was struggling to maintain the right position in the water, as they were not quite able to relax and find their balance. By holding on to the pool side they were – with some instructions – able to correct their head positioning and relax their legs. Soon this became easy enough for the students to try their skills out in the open water; those who still could not quite manage the right positioning had my hands support their lower backs to allow them to let their arms extend out to their sides, their legs to relax and

their heads to tilt back. Experiencing the right form with just a bit of support let the students get a feel for the skill. They were further instructed to take deep breaths, and before long they had got the hang of the positioning, and helped spot each other.

Floating did not prove quite as easy for the insecure students, as they were very hesitant to lean their heads back into the water. Experimenting with the extent to which they could lean back they all came closer to a horizontal position. My hands supporting their necks and lower backs eventually gave them the confidence to relax and hold the proper form, mostly due to a focus on relaxing their core sections and looking at the ceiling, allowing for easier breathing and a higher chest position. Working their way to hold on to the pool side with a single hand soon enough led to all but one of them managing their first few seconds of floating – something they excitedly described as a feeling of weightlessness.

The students made brief attempts at floating on their fronts, using their new breath control technique. The class pointed out the positioning of their arms and legs as important technical details, which according to them made for balance and to float with very little effort.

Treading water in shallow to medium deep water

To prepare for the following activity the students practiced sculling, to perfect, or correct, the technique that they used during the warm-up. Moving on from floating to treading water seemed to be a natural transition, with the most confident students going out to the deeper section, switching between floating, treading and breast- or backstroke swimming. The level 2 students struggled initially, but with some manual corrections – my hands guiding their legs – of their kicking technique and guidance to coordinate their sculling and kicking, they managed to stay above the water in the shallower section.

The level 3 students tried to leave the pool side, but as they had no previous experience of the leg kick it proved to be too complicated. As some of them had a tight grip on the side of the pool, they were told to try kicking with slow, powerful motions while only placing their fingers on the pool side, as if they were playing the piano. This was not only fun – according to the students – but also proved to be an effective way of transferring the effort from their arms to their legs. Some attempts at releasing their grip were made, and although they quickly returned to the safety of the pool side they had clearly come a long way.

Finally, the students were yet again asked if any of them felt more confident and safe in the water than before, and now both the level 2 and 3 students indicated that this was clearly the case. Unexpectedly even the experienced students admitted that they had taken their in-water confidence a step further, as they had learnt to transition from floating to treading and on to swimming. When the class was asked if there were still some that did not feel comfortable, no hands were raised, and by the smiles on their faces this really seemed to be the case.

Technique practice in shallow water

Time was running short as the students had opted to spend more time on floating and treading water than previously planned. Some continued to work on their breaststroke leg kick holding on to the side of the pool, while the rest paired up, holding on to each other's shoulders trying to move their friends using the momentum from their leg kicks.

4.1.3. Development plan analysis

The general level of proficiency in the class proved itself to be along the lines of the student's estimations, with a great leap between the more experienced swimmers and the first timers. Although the level 1 students could have benefited from somewhat more advanced exercises they were still able to make progress. On the other hand, the shallow water practice from Step 1 and 2 (see 8.1. Appendix) focused on variety, in terms of in, under and above water movements and techniques clearly had great effect in raising the level 2 and 3 students' in-water confidence. Looking at the progress and overall proficiency in the class after the first session in the pool certain tendencies present themselves, indicating what the students need to take the next step in the learning process:

- Group formations

The initial split of the class into mixed level groups initially seemed to be a good idea, but did not hold up. With the three levels of proficiency in the group presenting themselves during the session the students were drawn to each other, forming new groups to be able to practice and share their experiences with others on the same level. Continued level appropriate group work can further benefit the students learning. The possibilities to work collectively and progress at an appropriate pace were contributing factors to their progress and enjoyment.

- Variety

The games as well as the floating practice had the students benefit in several ways from the mix of activities; some had great results attempting various ways of diving while others made their big leap jumping from the side of the pool, parts of the group wanted to expose themselves to the open water while the rest found their confidence working by the pool side. Working with a variety of different ways to approach each exercise can according to the observations from the first session provide every student with a customized learning path and a choice of technique to fit their individual needs.

- Mix of technical skill practice and confidence building activities.

Allowing the less experienced students to further get used to the water and continue building on their foundational skills – floating, treading water and basic swimming – the shallow water practice is still an appropriate venue in which to extend their comfort zones. A key component for the student's progress is to elevate their in-water confidence step by step. The addition of further skill-oriented exercises can bring great benefits for the whole class, including the more experienced students, as a healthy balance of fun and function will ensure the students enjoyment as well as their progress.

- Level appropriate exercises

In general terms the students have now collectively moved on from the basics of Step 1. To maintain the momentum generated by the confidence-building exercises from the first session the development plan could now emphasize the technical skills even further, partly to give the more inexperienced students the chance to extend their skills towards the deeper water and more and greater exposure, but at the same time allow the experienced students to advance in a more challenging environment. This could be achieved through a development plan with the choice of shallow or deep water appropriate exercises.

4.2. Cycle 2

4.2.1. Co-construction of practical exercises

1. Students' relation and attitude towards water.

The students were very happy after the first session in the pool, explaining that they had enjoyed the exercises, but also that the skills in practice had given all of them much new confidence – on different levels – going into the second session. A major change in their attitudes towards deeper water was that almost the whole class now felt good where their feet could not touch the bottom of the pool.

The games were fun for all, particularly as they had learnt new underwater skills which, while introducing new and exciting ways to play, had made the water much less intimidating. In addition, they no longer needed to hold their noses while jumping or diving. The level 3 students discussed feeling safe and were ready to learn even more, as they were no longer nervous, just excited. Some of them were even considering taking a step towards the deeper water. The level 2 students mentioned that what they had enjoyed the most was also what they had made great benefits from during the previous session – floating and treading water. The skills were seen as a confidence factor in deeper water. One of the level 2 students explained the skill of floating and treading water as a 'life saver', providing safety in case of an emergency where it would be possible to wait for help to arrive. The rest of the class agreed. Some level 3 students filled in, admitting that they had boosted their confidence levels after perfecting their technique.

2. Review of the development plan and how the 5 Steps can be applied practically.

The students collectively reviewed the development plan, assessing their progress based on the goals that were set during the first co-construction session. Working with the previous plan of practical exercises the students discussed having familiarized themselves with the development plan, exercises and learning methods, elaborating on the importance of continuation when learning new skills in the water. Since a lot of the skills, floating and treading water especially, were relatively new to many of the students they explained that it was very good to be able to go for further practice, especially following a program that – according to them – felt more like playing than training, yet made it easy to learn.

Step 1 and 2 (see 8.1. Appendix) were considered important to lay a solid foundation for more advanced practice, and Step 3 a much possible progression, according to the level 1 and 2 students. The level 1 students were additionally interested in trying out step 4, motivated by the jumping and diving progressions.

3. Students' present level of swimming proficiency.

Along the lines of the reasoning on their current attitude and relation to water the students had increased their over-, in- and underwater skill and confidence level, while also making good progress with their safety skills, i.e. floating and treading water. They found technical swimming skills in breast- and backstroke to be something they wanted to go into more in detail, as many of the students felt as though they were lacking efficiency and precision in their movements. Level 2 and especially level 3 students wanted to learn the basics as well as the arm-leg coordination of breast- and backstroke.

Continued practice on Step 1 and 2 presented itself as the best option for the level 3 students, as they would benefit much from an improvement in their safety skills and their basic swimming technique. A slight progression into Step 3 would serve well for the level 2 students, extending their present in-water confidence to the deeper water, increasing their range of safety. The level 1 students could also take advantage of Step 3 as a base for their continued practice, with some additions from Step 4 to start improve their deep water diversity in terms of over-, in- and underwater confidence and safety.

4. What skills the students consider to be their strong/weak points.

The whole class discussed feeling much safer under the water, which had previously been one of the main issues limiting their confidence; the level 3 students now felt much safer with jumps, dives and swimming under the water, as well as floating on their backs. The level 2 students had enjoyed the same benefits, also adding treading water as newfound strengths together with a greater confidence in deeper water. Furthermore, the level 1 students now mentioned floating and treading water as their strengths, together with breaststroke swimming and diving.

5. What skills the students would like to improve.

The students' preference in terms of water depth saw parts of the class wanting to move on to the proper deep water, while some would rather make the transition gradually or stay in the shallow water altogether. A solution was found as the students divided the class into three categories: Shallow, mid and deep. The shallow group (chest-deep) consisted of all level 3 and some of the level 2 students, while the remaining level 2 students formed the mid group (depth just exceeding the students' height) and the level 1 students the deep group (overhead deep).

The class wanted to emphasize the foundational skill technique practice – floating, treading water – as well as the actual swimming of breast- and backstroke. However, they still wanted to keep the exercises from the games sequence to increase their in-water confidence. The level 2 students requested additional backstroke practice, while the level 1 students wanted to learn how to dive head first from the side of the pool, how to hold their breath under water to go for deeper dives, and further improve their in-water balance skills.

6. Actual components of and target goals for the skills in question.

With the students divided according to their choice of water level and exercises to match, the following components and target goals presented themselves:

Level 3: Continued work with Step 1 and 2, focusing on confidence-building shallow water practice in the form of jumping and diving, and further emphasis on the foundational skills to develop technical proficiency and safety – floating (back and front), treading water (modified for shallow water) and independent leg kick and arm stroke practice for breast- and backstroke, ultimately leading to a coordination of the two.

Level 2: The Step 3 components match those of level 3 seen above, except that the practice takes place in mid depth, placing more focus on perfecting breast- and especially backstroke

swimming, aiming for the steady, efficient technique required to relax, enjoy and stay safe in deeper water.

Level 1: Based on perfecting Step 3 the target is the same as that of level 2, apart from the extended water depth. Taking on parts of Step 4 the additional components consist of dives from the side of the pool, underwater breath control and surface dives, as well as improvement of in water balance skills. The target goal is an overall versatile in-water confidence and technical skill level.

7. How the students would like to practice the selected skills.

The students wanted the plan of practical exercises to remain unchanged apart from some minor adjustments; to place more emphasis on the technical skills practice they decided to incorporate the entire portion of games into the warm up in order to free some time for longer sequences of technical skills practice. As the whole class would basically be working with the same exercises, just in different areas of the pool, they opted for a large variety of devices and learning options for each skill, including kickboards, the side of the pool, technical splits in breast- and backstroke practice etc., to be able to account for the needs of every individual and level (See 8.3. Plan of practical exercises for the plan developed by the students).

4.2.2. Implementation of development plan for practical swim teaching

The whole class yet again showed great excitement on their way to the pool, although this time the students were much less tense and nervous, as the work during the co-construction and the last swimming session had taken the edge off; knowing the water depth and the plan of exercises beforehand was a contributing factor. The newfound level of in-water confidence among the previously insecure students shone through as they were very eager to try their new skills.

Warm-up games

Starting the warm-up the students had entered the pool in collectively, in their groups, immediately starting to play around with the hoola hoops, sinking rings and their pool side jumps. In contrast to the previous session the students completely neglected the pool side – they were all now moving around freely in the water. As the students already were familiar with the exercises they quickly managed to take their progression a step further; the level 3 students tried more difficult ways of swimming, gliding and diving through the hoops, now with no hesitation to submerge themselves completely in the water. They enjoyed looking for the rings dropped in the pool just as much, and sent each other to search for and pick up what they had found as they tossed the rings back in. If jumping from the side of the pool had been a major step for the level 3 students during the last session, this was not the case anymore – they jumped in backwards, tried some spins and even a few cannonballs.

The group in mid depth started out slow to get themselves accustomed to the deeper water, opting to stay where they could still reach the bottom while keeping their heads over the surface. The group went on to set up their own little obstacle course where they would jump from the pool side, swim through a hoola hoop held under the surface by a friend, and then dive down to pick up a ring from the bottom. The diving part was quite difficult at first with the increased water depth, but after a demonstration and some quick pointers on how to make

the initial 180 degree rotation to get their behinds above the surface and heads pointed down, all of them managed to make their first catch.

The deep end of the pool had clearly been a perfect choice for the entire level 1 group, as they enjoyed the games to a full extent. Holding the hoops up for their friends proved to be a challenging yet exciting task, much because of the fact that the students holding the hoops had to tread water without the help of their arms – a technical skill still slightly out of reach for most of them. The students' in-water balance was further put to the test through their work on forward- and back rolls, also opening for great improvement in their ring dives as they found out that a perfect initiation of a dive is essentially a half forward roll. This inspired the students to dive deeper, using their breath control. Using breaststroke technique was a deciding factor in terms of getting down efficiently and far enough to be able to reach the bottom. Diving from the side of the pool was something that quite a few students struggled with, not finding the proper angle and jumping, instead of pushing, off from the pool side. After correction of their hand positioning, placing their heads between their arms, as well as instructions on how to use their legs to press their hands down first through the water, the students started to manage their dives. The students took turns, watching each other's attempts – something they explained as a contributing factor to be able to pick up the technique in such short time.

Throughout the warm-up games sequence the three groups worked very well together, inspiring and encouraging each other to practice and learn new things. Most of all the students were motivated by working together with friends on the same level, as their friends' progress gave them confidence and opened their eyes to new possibilities. They also explained that they would pick up technical details by looking at their friends, and that they went on to even teach each other a thing or two.

Floating

The level 3 students now leaned their heads back into the water without hesitation, although many of them still proved to be a bit too tense to be able to stay floating on their backs for more than a few seconds. The main issue was a slight flex in the students core/hip region, which left their core section stiff and their legs in position too close to the surface. The students tried supporting themselves on kick boards to be able to correct the problem, but soon found that this had them depend on the boards instead of their technique. The students found it easier to hold the right position with the support of my hand on their lower backs. They were guided towards letting their legs sink down while extending their arms over their heads, palms facing up, taking deep breaths, elevating their chests and tilting their heads back. One by one the students could do with less support, until the point where they were all floating freely in the open water. After some experimentation they found that the easiest way to assume the floating position was to fall backwards with their arms extended over their heads, focusing on the technique of raising their chests and tilting their heads back. The students really enjoyed floating on their backs, and kept at the practice for long. Floating on their fronts was something they learnt quite quickly while showing a great amount of newfound in-water confidence; the students literally threw themselves at the task, landing face first in the water.

As the level 2 students had managed to get comfortable with their floating technique during the first session they had no trouble with their body positioning in the water. To take on a new challenge they now tried to glide on their backs. Some of them even drifted off into slightly

deeper water – this did not go unnoticed by their friends who quickly tried to follow. Out of the group only a few of the students had tried to float on their fronts before the previous session. The added water depth was a contributing factor of concern, as they did not want to risk running out of air and sink to the bottom. After some instructions on underwater breath control the group had a go at the exercise, only to find out that breathing came in second to the use of their arms and legs in terms of key techniques that would keep them floating steadily. Following their success in the first activity the additional progress with their floating skills had clearly boosted the students' confidence.

The increased water depth gave the exercise a new twist for the level 1 students; they continuously had to swim or tread water in order to stay afloat. Finding the right body positioning now required a great deal of focus. After a short demonstration on how to move from one technique to the next the students made their best effort to alternate between treading water and floating. Using the arms for balance, while leaning back to look at the ceiling, was the key technique, according to the students. Floating on their fronts they found the same technical points to be helpful, in combination with the breath control they practiced earlier while diving. Some students had brought swim goggles, and exclaimed that it felt 'like snorkeling in the summer, except there is nothing to see'. After mastering floating both ways the students started experimenting with what they termed 'rollovers', i.e. a transition from front to back, or the other way around, without losing their horizontal position.

Treading water

The level 3 students decided to go back to the pool side to work on their leg kick. Executing the movement while in a vertical position proved to be an issue for the whole group – the general tendency among the students was to fall into the horizontal position that they had become used to for floating. Manual corrections of their leg kicks were also needed, as the students could manage the pulling phase quite well, but were lacking the proper push in their leg extension. Splitting the kick into three phases, for simplicity, had them try to pull their feet in towards their behinds, extend them out to the sides, and then extend and push their legs together until they could feel their feet clap together. With my spotting and some independent practice the students had their leg kicks looking much more efficient, and they tried their luck in the open water. The coordination of their arms – sculling to maintain a balanced horizontal position – and their legs – kicking down towards the bottom – was another issue, as they realized that they would not be able to support themselves on the bottom. Some students opted for my support, holding their hips, while some used kick boards to support themselves. Although treading water was a bit too advanced for most of the level 3 students, some made remarkable progress and managed to stay afloat for a few seconds using the correct technique.

Many of the level 2 students enjoyed great progress, utilizing their arms, staying balanced and relaxed sculling the water. Meanwhile, parts of the group complained about getting tired too quickly, which judging by their constant up and down movements had to do with the leg kick being forced and incomplete. The students were told to focus on emphasizing each kick with slow and methodic movements, and rather to focus on power than quickness. This had great effect, leaving the whole group with close to perfect technique without any major adjustments.

With the constant demand of treading water to be able to stay afloat throughout the two first exercises the level 1 students had already kick-started their treading practice. Making my way over to their group they were already busy trying all sorts of combinations; most impressive

being some perfectly executed back rolls, starting and ending in a horizontal position. Transitioning from treading water to floating and onto swimming had the students feel safer and even more confident in water of this depth (exceeding triple overhead).

Technique practice

Going into the main event it was clear that the rigorous foundational skill practice had paid off; the level 3 students showed great awareness in the water, using floating as an entry position for correct alignment of their bodies in breast- and backstroke swimming. Although treading water had been out of reach for most of the students the practice nonetheless proved to have significant carryover to their leg kick, which was practiced using kick boards. Starting from side to side along the shallow end of the pool the group worked hard to find the right coordination of their legs to gain speed; with further manual corrections to help emphasize the three phases of the kick they found their way towards the right timing. The overall most common problem was the kicking rhythm. They all rushed through the movement thinking that the more they would kick the faster they would go, and ultimately stay above the water. Working along the lines of their very successful floating practice the students were advised to slow things down to be able to concentrate on performing each movement the right way – this included their breathing as well as their kicking. Kicking once followed by a full second long glide phase with their legs extended had the students make every kick of their legs count.

Moving on to the arm stroke practice the students needed some initial help shaping their hands in order to use their arms to actually move the water with their strokes instead of just splashing around. Keeping full tension in their arms and hands, they managed to get the water moving and could move on to try drawing the shape of a heart in the water, using their arm strokes while standing still on the bottom. This analogy did the trick, and the students went straight on to try their combined breaststroke out, swimming from side to side yet again. This was enjoyed to the fullest extent by the whole group, as none of the students had previously been able to swim for much longer than a meter or two. They proceeded to line up by the pool side to see if they could make it across the shallow end.

As the students were starting to become more and more familiar with the motion of the leg kick they managed to perform this feat relatively well even on their backs, holding their kick boards for support. For many of the level 3 students floating on their backs had become their trademark move, lending itself well to backstroke swimming as the students decided to drop the kick boards. For most this proved to be a fair bit more difficult than breaststroke swimming, although some did remarkably well and managed to swim almost as far on their backs as on their fronts. The students no longer displayed any signs of being overly bothered by having the water flush their faces; instead they were mostly concerned with making their best efforts, while commenting on their friends' techniques. A few students who were taking a break noted that their friends looked like swimming frogs – a fitting analogy for correct form.

The level 2 students started out their breaststroke practice by swimming the same stretch as their friends in the shallow end of the pool, just a bit further out. They all displayed a reasonable level of proficiency, with well-coordinated movements and good body positioning. They worked on performing powerful, exaggerated movements leading up to an extended glide phase, which especially benefited the ones who had been concerned with the deeper water, as they now found that they needed to put in much less effort to go where they wanted to go.

With backstroke practice being their activity of choice from the co-construction session the students quickly decided to move on to put more work into the reversed position. Some could not quite find the right position in the water to make it very far on their back; they were not able to utilize the power of their kicks, as their body positioning resembled that of sitting in the water. After a demonstration and a quick reminder to start their work in the floating position and to kick the exact same way as for their breaststroke, stretching their entire bodies out for the glide phase, they tried once more and made a note to look up at the ceiling in the direction they were going. This helped all but two of the students in the group find their form, and as they kept on swimming back and forth. The students who still struggled with the exercise had a hard time figuring out how to include their arms in the movement, and were advised to try performing each collective movement from a floating position, with their hands placed behind their ears, and go on to push and extend their arms down to their hips. With the analogy of making snow angels while trying to put their hands in their pockets, the students slowly but surely found the appropriate coordination to be able to swim back and forth.

The level 3 students wanted to become more efficient and able swim faster. They found the more specific technical practice helpful, as well as enjoyable. The whole group lined up by the side of the pool, and were instructed to focus one specific aspect of their technique during each run; among other things the students tried to swim with a 1-2-1-2 pattern (1 arm stroke followed by two leg kicks), a 2 second glide phase where they would stretch their arms and legs out as far as possible, and with focus on their breath control (exhaling under the surface). According to the students this not only improved their existing technique, but made for a fun new challenge at the same time. For backstroke practice they went through the same series of varied exercises, and some were able to double their speed while still maintaining their energy.

By the end of the session a major part of the level 3 group was able to swim from one side of the shallow end of the pool to the other (roughly 15 meters), take a quick rest, and then proceed to swim back. Those who did not make it all the way over without letting their feet touch the bottom had still come a very long way from their first encounter with the water. Their fear had been replaced with excitement and newfound confidence in their abilities. One student said: ‘This is so nice, I can swim now’.

Many of the level 2 students had been glancing over at their friends in the deep end of the pool during the lesson. As the level 1 students went for a lap around the entire pool the level 2 students decided to follow. Their stunning progress throughout the lesson has instilled the in-water confidence needed to take the leap into the proper deep water, which was something they had not thought possible at the start of the project. As the huge group of students made their way around deep waters of the pool there was water splashing everywhere, and the scene somewhat resembled the start of a triathlon swim race. For any swimmer to be comfortable in such an environment is a true testimony to their abilities.

4.2.3. Development plan analysis

The final steps of the students’ progression during the second swimming session indicated just how far they had come from their point of departure just a week earlier; with a breakthrough in both technical proficiency and in-water confidence the level 2 and 3 students had now taken a big step up the 5 Steps scale (see 8.1. Appendix). The progressive technique training had reinforced and even improved the experienced level 1 students’ existing skill base. The success that was enjoyed by the students progressing on their various levels can be attributed

to the level-appropriate group formations and the range of options in terms of water depth and exercise progressions to match.

With the students opting to practice together with friends on the same level they enjoyed the benefit of exploring uncharted territory as a group, learning from and inspiring each other to unlock their individual embodied potential. Furthermore they were able to progress at their own pace towards a common goal, without being forced outside of their comfort zones. This proved to be an essential aspect to the success of the more inexperienced students, as they managed to gradually accustom themselves to the water by pushing their own boundaries.

The lower level students made great results from the fact that the whole class was able to work with the same plan of practical exercises; while providing a target to aim for, this also went on to provoke a sense of accomplishment in them as they mastered the very same techniques and exercises practiced by their peers. The level 2 students joining the deep water group after monitoring their activities all through the session really captured the essence of this. According to the level 1 students even the basic exercises, designed for students with an in-water confidence equal or similar to the level 3 students, were much likely to have great effect when taken into a deep water context.

The students' growing awareness of their proficiency in the 'life saving' skills of floating and treading water had great impact on their swimming technique as well as their energy maintenance, as the more secure they found themselves in these positions the less physical output they needed to exert to stay afloat. Building up to the entry into the deep water had much to do with gaining confidence through these skills in combination with the improvement of breast- and backstroke technique, according to the level 2 students.

For the level 2 and 3 students the balanced mix of confidence-building exercises in the form of over-, in- and underwater games and activities, and pure technical skill work focusing on balance and movement, made for a technical progress relative to their growing confidence levels. The many variations to the exercises further increased the learning potential embedded in each activity, clearly noticeable in the breast- and backstroke practice sequence, where the level 3 students simplified things, working their arms and legs separately, while the level 1 students turned the difficulty up a notch with advanced variations of the combined technique. Incorporating games into the equation had this mix further enhance the effectiveness of the plan of practical exercises according to the students; providing fun as well as functional activities and practice modes, while learning new and important skills. As the plan of practical exercises was open to changes, such as the decision to swim around the pool instead of continuing with their skills practice, the students were able to seize good opportunities.

In order to continue the project, a suitable next step for the students in water progress would, following the important factors defined above, present itself clearly based on another student collective co-construction. According to the students' current level of proficiency a continued work with the recent plan of practical exercises could prove valuable for the level 3 students in order to perfect their breast- and backstroke technique, while the level 2 students would benefit more from joining the level 1 students, possibly moving on to Step 4 of the development plan.

5. Discussion

Based on the results from the two Action Research cycles (see 3.2. Action Research and 4. Results) implemented in the study, a discussion on the *benefits of Teaching In-Water Confidence* will be presented below, followed by the proposition of a framework for application of the TIWAC model in *approaching a full class context*. Lastly, concerns and limitations will be reviewed. The discussion on these above topics is formulated as to help teachers to structure, implement and improve their own learning scenarios in collaboration with their students, using the TIWAC model.

5.1. Benefits of Teaching In-Water Confidence

According to the results, students with little to no previous experience of swimming tend to have insecurities and nervousness connected with in-water situations and circumstances, much due to their unfamiliarity with the new medium. In order for these students to become comfortable enough to enjoy, and proceed to build their proficiency in the water, a solid base of ability, skill and confidence formed in a safe environment through exercises and activities structured around their specific needs is required to restructure, develop and define their relationship with the medium, following the reasoning of Dysthe (1995), Imsen (2000) and Säljö (2005). Students already on their way to mastery of the water environment also benefit from a smooth transition from one developmental stage to the next, combining advancements in technical progression with safety measures and fun activities in order to solidify their capabilities. Following the original study of *Vattenvana* (Håkman, 2015) the concept of TIWAC has through the results of the study been shown to help students develop safe and healthy relationships to water while improving their proficiency in the process, based largely on the following factors: *The balance of confidence and skill, enjoyment and success, and foundational exercises as cornerstones to functional technique.*

- Balance of confidence and skill

For learning in in-water scenarios it is important to stress the relationship between water-related confidence and skill-based technical proficiency, as these concepts can – according to the results – be seen as two sides of the same coin. The level of confidence dictates the skill, and vice versa. This notion aligns with Piaget's (1985) equilibration theory, as the correlated development of confidence and skill constantly provokes a self-regulating process of reconstructing the students cognitive structures related to water. For the level 2 and 3 students the balanced mix of confidence building exercises and pure technical skill work made for a technical progress linear with their confidence level, a critical aspect for maintaining continuous progress, as one does not come without the other. In accordance with Kraepelien-Strid's (2007) notes on the importance of applying the right method to the right context, inexperienced students are more likely to reap the benefits from a series of games – such as those presented in the first cycle of the study – than from a detailed mechanical approach to collective breaststroke practice. Following the natural order of progression, allowing students to build up a well-rounded, solid proficiency, each skill will be attainable in its own good time. Following Sjödin's (2008) reasoning in terms of promoting learning progressively through safety and enjoyment, it is of first and foremost concern for students to generate confidence over, in and under the water to attempt any kind of horizontal body positioning, which in turn will allow for skill development. Proficiency in fundamental skills and abilities eventually affirms the safety and inspires the confidence necessary to embark on deep water expeditions and move on to other advanced challenges. Traits of this elaborate balance of

confidence and skill could be observed throughout the students in the class, regardless of levels, although extensively in the work of the lower level students. Further along the levels the subtle distinctions between these two factors gradually fade with their mastery of the element.

A clear cut example of the gradual development of confidence through skill and vice versa, can be seen in the way the students' experience of the water intensified in positivity throughout the first session in the pool. Reconnecting with Sjödin's (2008) thoughts on progressive learning, moving step by step through each progressively more challenging exercise had the initially uncomfortable, slightly afraid students acquaint themselves with the water at an appropriate pace, picking up little pieces of necessary technique and awareness of the surroundings as they went on. For each new discovery of their own potential in contrast to what at first seemed intimidating and dangerous, the students – following Piaget's (1967; 1970; 1985) reasoning on equilibration – restructured their conception of water, diminishing their fear and their doubts about their own capabilities little by little, until the point where they all could experience safety, comfort and joy in the water.

- Enjoyment and success

A playful approach to swimming goes a long way in terms of affecting students' attitudes towards water; this notion is regarded as central to successful in-water teaching by Kraepelien-Strid (2007) as well as Sjödin (2008), since less than enjoyable experiences run the risk of making students feel uncomfortable in and around water while the opposite scenario has swimming closely related to fun and games. Throughout the results of the study there are constant connections between the students' enjoyment and their success, much due to the fact that the method embraces the concept of enjoyment as the basic, universal component of in-water confidence. This finding goes hand in hand with Kraepelien-Strid's (2007) reasoning on the benefits of allowing students to experience success in the water to ensure a positive learning curve. With games designed for fun and function making up a large portion of the first plan of practical exercises the students were set on enjoying their time in the water to a full extent which also turned out to be the case, and a contributing factor to the great success of comfort and skill building among the lower level students, much like in the original study of *Vattenvana* (Håkman, 2015). The enjoyable experiences from the first session in the pool later turned out to have significant carryover to the general skills practice, as the games made the students realize the benefits of being able to swim, float and tread water in taking the fun to the next level. Attributing their success to these foundational skills had them opt for a more technique-focused set of exercises for the second session, which turned out to be no less enjoyable than the first, in fact even more so.

- Foundational skills as cornerstones to functional technique

As pointed out by Sjödin (2008), in-water confidence is the defining factor for swimming proficiency. Among the important factors for building a solid skill base the foundational abilities of floating and treading water stand out in providing students with confidence as well as technical skill universally applicable to any in-water scenario. The students maintained that the practice of these skills had given greatest benefit while also being the most enjoyable. With a focus on the foundational skills as prerequisites to any deep water activity – functioning as technical stabilizers and confidence factors – students are equipped with effective and safe means to stay afloat without being experts of breast- or backstroke swimming (these skills are still very important for a well-rounded proficiency). Building in-

water confidence and proficiency around these skills, students can extend their awareness in the water environment to a variety of body positions, allowing for an easy transition to more advanced activities. As much as floating was a main reason for the lower level students' increased enjoyment and feeling of safety in the water, the skill also had significant impact on the students' breast- and backstroke technique in terms of providing an energy-efficient body positioning. In being able to tread water they had a versatile, energy-saving safety position available for deep water visits, which technique-wise further developed their leg kicks. During the second co-construction session the class further described the foundational skills as lifesaving, emphasizing the fact that they – with these skills at their disposal – had two safe modes to rely on in case of an in-water emergency.

5.2. Approaching a full class context

Along the lines of the concepts discussed above, the results further reveal several key features which can be attributed to the successful customization of the method to fit the large group of students and their particular learning scenario. The framework for adapting the TIWAC method to learning scenarios of various sizes and relative student levels centers on the guidelines for *utilizing the method to promote success* and *facilitating a customized learning environment*, which are presented below.

5.2.1. Utilizing the method to promote success

- The 5 Steps

The 5 Steps development plan is specifically suited to progressive learning through a carefully structured series of level-relevant techniques, exercises and activities designed for students to make gradual advancements in order to reach the ultimate standard for in-water confidence, proficiency and safety – life saving. This being said, there is no set formula for learning, and in order to adapt the development plan to any particular learning scenario, regardless of the requirements, the basic principles and components work interchangeably, allowing for full customization to fit the individual needs. Following the lead of the original study of *Vattenvana* (Håkman, 2014), taking bits and pieces from different steps can create a multifaceted learning program incorporating many aspects of in-water confidence or enhance the capabilities of an existing plan of exercises through change and modification. No plan will be identical to the next as the 5 Steps plan should be seen as a point of departure, serving as a point of reference for extension or improvement throughout the learning process. As shown by the results of the study, the trick when accounting for a large number of learners with a varied level of proficiency is to find the magic formula to fit the actual circumstances.

- Co-construction

The co-construction sessions serve the purpose of providing an initial as well as continuous link between the method of the 5 Steps plan and the students' individualities, incorporating their needs and requirements into the creation of the learning plan, promoting a learner active, knowledge building process according with Naylor and Keogh's (1999) take on constructivist learning. While mainly focusing on the aspects of collective planning and outlining of the students proficiencies and levels of in-water experience, the sessions greatly benefited the students in terms of preparation – providing assurance in their knowing of what was to come, as well as a head start in their learning process. This follows Von Glasersfeld's (1995; 1998) reasoning on knowledge assimilation through existing cognitive structures. The inclusive

nature of the co-construction also opens for the important possibility of taking every individual level into account in the planning phase as well as the development of the program. As pointed out by Dysthe (1995), extensive knowledge of the learning prerequisites for the students provides a solid base for the learning scenario. Extending this argument, Imsen (2000) and Säljö (2005) both emphasize the benefits of student engagement such as in the collectively managed co-construction process, which made it possible for the students to take their significant level differences into account throughout the entire project, in terms of both planning and practical work, in turn allowing for every student to learn at their own pace, in an environment suited to their needs. On that note the answer lies in the co-construction; the right approach to an in-water learning scenario will present itself working together with the students to meet their needs and requests, allowing the students to – as proposed by Holmes et. al. (2004) for communal constructivism – leave their personal imprints in the development of the course through constant advancement and refinement of the original plan.

- Cyclical work

The working process is based on the cyclical sequencing of Action Research, perfectly suited for continuous improvement and developing an overall awareness of the circumstances, allowing for opportunities to present themselves, and expanding possibilities to become available throughout the project as exemplified by Kemmis and McTaggart (2005). Being tuned in with the learning scenario, contextual requirements will present themselves to the teacher through constant evaluation and analysis, which in turn can provide the guidelines needed to customize the development plan to the group, as well as to the individual students, which according to Hien (2009) is one of the main benefits of the cyclical process. The insights that became available through the analysis of the first cycle of the study laid the ground work for adapting the development plan to the students in the context of the group, providing the exact components that made for a successful result; level-appropriate group formations and a range of options in terms of water depth and exercise progressions to match.

5.2.2. Facilitating a customized learning environment

- Levels and level-appropriate group formations

To account for the range of student proficiency and in-water confidence in the class, a distinction of relative levels has to be made in order to define the various stages of current development for the students. This way, working progressively, in order to reach the target of the zone of proximal development for the students included in each one of these levels, it can be allowed through customization of the learning plan to meet the individual needs in each group and the class as a whole, which Sjödin (2008) labels as a key component for creating a functional in-water learning scenario. At the same time, the level distinctions provide valuable information for group design, the correct use of which can greatly benefit the students in both enhancing their confidence and in the promotion of skill building, providing for the dynamic, collective connection of shared consciousness synonymous with zone of proximal development learning, as noted by Roth and Radford (2010).

Motivated by the reasoning from the first co-construction the students opted for an inclusive group scenario where the entire class would be following the same plan of practical exercises, divided into smaller groups of equal numbers. The proposed mix of experienced and inexperienced students would according to the students be able to work collectively with those of higher proficiency reassuring and helping their friends. However, not long into the

first session in the pool the students' level differences posed a problem: The experienced students followed their natural instinct of seeking to challenge themselves in the water, and as a result rendered themselves unable to account for their slightly nervous and insecure peers. This observation exemplifies Roth and Radford's (2010) and Radford and Roth's (2011) argumentation on the uneven distribution of knowledge in a group as a not necessarily dependable means for students to approach their zone of proximal development. With a distinction between proficiency levels clearly observable the inexperienced students were instead drawn to each other; reassured by the safety of the pool side and the fact that they were able to relate to one another's feelings and concerns for the novelty of the situation. From a level appropriate, common point of departure, they could now start to build their confidence and skill levels in a low pressure environment where every one of their efforts would generate motivation for courage and inspiration to learn for their friends, in turn opening the door to progress through new discoveries. As discussed by Radford and Roth (2011), meaning making agreements along the lines of how things are perceived or how a task is supposed to be executed is central to allowing for advancement within a zone of proximal development. The very insecure level 1 students initial steps in the pool were very much dependent on the fact that a few of their peers were able – after deliberation – to dip their heads under the water, jump in from the side etc. – which following Roth and Lee's (2007) reasoning opened for mutual understanding and agreement through actions stimulating reactions – and gave the impression that it was actually possible for themselves to accomplish,

Approaching the second cycle of the study the students were now aware of the way their level differences affected their experiences in the water. The variety of options for water depth and exercise progressions (see below) offered a level relative split of the class, where each student would be able take part in a learning environment of suitable level in terms of technical proficiency in a socially appropriate context. On these premises, the second session in the pool opened for an inclusive yet multifaceted learning scenario which students would benefit from exploring and learning together with friends on the same level, enjoying their step by step collective progress, while being presented with an ultimate standard for their practice in the example of their more experienced peers. This multidimensional group dynamic of mutual exchange within the class closely relates to the reasoning of Roth and Radford (2010) and Radford and Roth (2011) in terms of interchangeable learning roles; throughout the sessions the students were quick to follow each other's examples to draw necessary motivation, insight and understanding to step to the next level. That the level 2 students were able to work their way from mid depth to the deep water within the span of a single session can be attributed to the fact that they were allowed to master the necessary techniques and cement their confidence by mastering each step of their progression successively, on their own terms. Adding to this, the deciding factor would eventually turn out to be the presence of the level 1 students in the deep water, an inspiration and a motivation as much as a point of reference for the level 2 students who eventually knew when the time was right to make their move.

- Water depth and variety

Water depth can be seen as the great equalizer when it comes to progressive exercises; challenge a class with a simple, beginner-type, shallow-water exercise such as swimming through a hoola hoop or picking up rings from the bottom, and the confident students are bound to find the challenge too easy while the less experienced may thrive in its simplicity. Situating the same exercises out in deep waters will on the other hand have even the most confident student met with a challenge; to stay afloat with no support outside of individual technical skill is a challenge in its own right, as seen during the last session in the pool.

Combining another element only adds to the complexity, posing a requirement for the coordination of different skills, turning even the simplest exercise into a test of multifunctional proficiency. This insight is vital to a group scenario for in-water learning, since originally proposed in *Vattenvana* (Håkman, 2015), and maintained by Kraepelien-Strid (2007), the application of the right method to the right student is of key importance in unleashing the full potential for learner progression.

For the entire class to work with the same exercises not only simplifies the overall planning and management of collective practice. As described in the discussion of levels it also provides inspiring examples for the students and possibilities for a level transcendent instead of strictly level bound learning environment. While these benefits hold their own, an extension is possible through the simple means of variety, with great significance also in *Vattenvana* (Håkman, 2015); a range of level relevant exercise progressions allow for a close fit to the individual needs and preferences of each student, as the chosen activities or skills come with a wide variety of techniques, approaches and supportive devices. The varied approach to many of the exercises ensured the continued progress for students on all levels, most noticeably during the breast- and backstroke sequence where the level 3 students practiced the technical split (legs and arms separately) along the guidelines for the methods provided by Sjödin (2008), using flotation devices and the pool side for support, while the level 2 students focused on the coordination of the combined technique. The level 1 students took their practice a step further with advanced progressions designed to refine and perfect specific components of their technique.

- The teacher's role

The teacher plays an important part in facilitating the learning process by guiding the students through the co-construction and providing constant support in the water. Both Sjödin (2008) and Kraepelien-Strid (2007) strongly emphasize the significance of teacher competence – both in terms of preparatory work and flexibility to adapt to the learning scenario – as a requirement for successful student learning. Accounting for a large number of students with only a limited amount of time available for individual 1-on-1 encounters further stresses the importance for the teacher to assume an effective facilitative role to monitor and maintain the learning process within the frame of the carefully structured learning environment. As one can never predetermine learning in any scenario, the teacher needs to be able to constantly adapt to developing circumstances in order to find the right way to encounter different students in different situations, providing support and guidance in the zone of proximal development (Vygotsky, 1978).

In order to emphasize the collaborative learning a number of tools are at the teacher's disposal, all useful in their own right, although particularly effective when applied in the right context. In technical work the basic alternative aligns with Woods et. al.'s (1976) view on scaffolding; to present the students with a demonstration combined with instructions in order to present the exercise and clarify important technical points. While students may find their form right away, or with the help/inspiration from a friend, it can be worthwhile to apply the principles exemplified by Dysthe (1995) in order to give additional feedback or apply manual corrections in the case of a student struggling with a technical movement or having trouble understanding the mechanics of a certain position. Analogies were proven to work well in terms of explaining difficult or new movements such as breaststroke arm technique, which by drawing the shape of a heart in the water had the level 3 students perform exact strokes with little effort, or having the students ease up on their tight grip of the pool side when practicing

leg kicks by holding on like they were playing the piano. The similarity of backstroke arm technique to making snow angels in the winter is another example which had great effect for some of the level 2 students. Manual corrections further opened for the possibility of mechanically guiding students through complex techniques, allowing the students to feel the proper movements in order to be able to perform them on their own. One of the most effective manual corrections involved holding and moving the students' legs through proper leg kicks to start them up as they were working towards treading water and swimming breast- and backstroke. The common denominator for supporting the students in their zones of proximal development was, as proposed by Crain (2010), to emphasize successive, methodological, step by step development, while providing the most suitable means of support for the given situation.

Students on different levels all benefit from support in different ways according to their requirements and the task at hand. The level 3 students needed a significantly greater amount of care in terms of reassuring and comforting than the level 1 or 2 students, who tended to handle the situation well in the company of their groups, which directly related to their level of in-water confidence. Working with technical skills such as floating, treading water or breast- and backstroke swimming the level 1 students needed only brief instructions and demonstrations on a group level in order to get their progression on the way, with the exception of a few cases where a particular student needed some feedback to find their way. The level 2 students, on the other hand, needed more individual attention in finding the proper technique, in the form of light manual corrections and further explanations, although they could still rely on the group members for comfort and reassurance and would eventually continue their work in the company of the group. The level 3 students were entirely dependent on the 1-on-1 relation at the start of the project as to build the initial courage needed to feel comfortable with the novelty of the circumstances, yet by the second session in the pool, the unity of the group was contributing factor to the progress, as the students could benefit from peer-collaborative knowledge building in the social context (Hogan and Tudge, 1999; Gillen, 2000).

5.3. Concerns and limitations

- Time requirements

Working with a variety of levels in a large group of students the technical aspects of developing complex, coordinated proficiency proved to be additionally time consuming due to the fact that the students had the time divided between them, in order for every student to receive some special attention. As this mostly concerned movement correction and guidance through critical points of difficult movements – such as breast- and backstroke or treading water – for lower level students the time consumption did not result in any major set-backs. All but the most inexperienced students made great benefits from the collective group work approach; due to their existing skill base readily available for approaching the chosen activities they could proceed to learn together, without notable amounts of individual help needed. A group of relative size to the one in the study, consisting of mainly lower level students, might on the other hand have required a more extensive time table in order for every student to receive the assistance needed to make good progress. The confidence building activities in the form of games and activities over, in and underwater were not affected by the limited time for individual focus, as the groups made for a safe learning environment where the students could encourage each other.

- Staff assistance

Working with larger groups, especially where inexperienced students are concerned, the help of an assisting teacher is preferable. This is an issue of safety as well as an increased support for the students, regarding the fact that a small group of students is easier to account for than a large group. Some students may also require more attention than others. In order for the exchange between the assisting teacher and the students to be beneficial, the teacher would have to be – to some degree – familiar with the method and the learning patterns. Managing the situation singlehandedly requires great attention to detailed safety concerns and taking necessary precautions in order to ensure the safety of the students, informing life guards about the circumstances.

- Disabled students

While TIWAC has been shown to give great results for students of various ages and proficiency levels, according to this study as well as the original study of Vattenvana (Håkman, 2015), there is no evidence that the method can be suitable for either physically or mentally disabled individuals. Future research into the subject could further validate the method as a universal learning material for educational purposes.

5.4. Method discussion

As discussed by Kemmis and McTaggart (2005) Action Research presents a wide variety of options allowing for the customization of a research process to closely fit to the objective of this study. The cyclical work provided the study with the possibility to test and evaluate the TIWAC model through analysis, refinement and improvement, which in accord with the student-collective co-construction and collaborative work throughout the project provided the data necessary to distinguish valuable benefits of the method, as well as to outline a framework for the implementation of the TIWAC model as exemplified by Hien (2009).

In order to further ensure the validity of TIWAC as a suitable tool for in-water teaching and learning, the study *Vattenvana* (Håkman, 2015) was replicated to resemble the research procedures of the original to a close proximity. The format was reconstructed to follow the exact outlines of the original study, altering only the form of dialogue at the informal discussions during the co-construction sessions and the way time was distributed between the three student groups of relative levels of proficiency, as the increased amount of students set a higher demand for effective time management in order to produce satisfactory results.

As previously stated regarding the subjective nature of the results (see. 3.7. Subjectivity), the qualitative method and limited amount of practical implementations of the TIWAC model does not render the results universally applicable. Following the exact measures of the original study of *Vattenvana* (Håkman, 2015) implemented in a full class format this study does however reassure the positive nature of the results as to further provide useful insights into a specific learning context from which implications can be drawn to extend towards other learning scenarios where the themes presented in the discussion provide a possible framework for general application.

6. Conclusion

Through this study, the validity and potential of the Teaching In-Water Confidence (TIWAC) swim learning methodology – originally published in *Vattenvana* (Håkman, 2015) – has been reinforced; further emphasizing its’ diversity and applicability for confidence and proficiency building in-water teaching and learning in the subject of Physical Education and Health. Based on the implementation of the TIWAC method in a full class in-water teaching and learning project including 22 second-grade, elementary school students with varied levels of water experience, in-water confidence and swimming proficiency, valuable benefits to the application of the methodology have been discovered. Furthermore, a proposed framework for the use of the TIWAC model in approaching a full class context has been outlined, allowing teachers of Physical Education and Health to utilize the method in their own in-water teaching scenarios to facilitate a customized, student-centered learning environment, in collaboration with their students. Presented below are the main findings accompanied by the general outlines for the proposed framework, and finally further implications for future research:

Benefits of Teaching In-Water Confidence:

- Balance of confidence and skill
- Enjoyment and success
- Foundational skills as cornerstones to functional technique

The balanced mix of confidence-building exercises and pure technical skill work featured in the students’ development plan made for a technical progress linear with their confidence levels; a critical aspect for maintaining continuous progress, safety and enjoyment, allowing the students to realize their full potential and make steady, step by step progress. Embracing enjoyment as the basic, universal component of in-water confidence, the results showed constant connections between the students’ enjoyment and their success. The fun and games proved to have significant carryover to the general skills practice, as the students realized the benefits of the foundational abilities of swimming; floating and treading water constitute important factors for building a solid skill base. While providing students with confidence as well as technical skill universally applicable to any in-water scenario, the foundational skills were further described by the students as lifesaving, emphasizing the function of floating and treading water as safe modes to rely on in case of an in-water emergency.

Utilizing the method to promote success:

- The 5 Steps
- Co-construction
- Cyclical work

Specifically suited to progressive learning, the customizable 5 Steps model presents level-relevant material adaptable to the individual needs of the particular learning scenario, as the basic principles and components work interchangeably to allow for the creation of a multifaceted learning program that can be modified and improved throughout the co-construction working process. Serving as an initial as well as continuous link between the method of the 5 Steps plan and the students’ individualities, co-construction incorporates their needs and requirements in the creation of the learning plan, promoting an inclusive, learner-active knowledge building process. The cyclical Action Research influenced work process

opens for the possibility to gain complete awareness of the learning circumstances, allowing continuous improvement and developing as opportunities present themselves.

Facilitating a customized learning environment:

- Levels and level-appropriate group formations
- Water depth and variety
- The teachers' role

Accounting for variety in terms of student proficiency and in-water confidence, a distinction of relative levels defines the various stages of current development for the students. Working progressively, based on a customization of the development plan, the needs of each individual level, as well as the class as a whole, can be met. Furthermore, the level distinctions provide valuable information for group design greatly beneficial for enhancing the confidence of the students, and the promotion of skill building. Utilizing water depth in order to allow the entire class to work with the same exercises, simplifies planning and management, provides inspiring examples for the students, opens for a level-transcendent learning environment, and through a range of level-relevant exercise progressions to fit the individual needs and preferences of each student, as the activities come with a variety of techniques, approaches and supportive devices. Facilitating the learning process the teacher guides the students through the co-construction process as to create the best possible learning scenario, while providing various forms of scaffolding support – such as analogies and manual correction – for the in-water practice. The task of maintaining a balanced collective practice can be centered on the nature of the activity and the different student levels; the inexperienced students require teacher guided support to a greater extent than higher level students, as they can benefit greatly from group work exclusively.

Future perspectives:

The results of the present study are promising and can be tested in future research with more extensive applications of the TIWAC method in a variety of learning scenarios for the practice of Physical Education and Health regarding in-water learning projects of longer durations, particular student groups with different levels of in-water confidence, and students with disabilities or special needs. With further research, the TIWAC method can be proven as a valuable asset for the fulfilment of the goal of eliminating cases of drowning in Sweden, as set by the Swedish Lifeguard Association (SLS, 2014).

7. References

- Adelman, C. (1993). Kurt Lewin and the origins of Action Research, *Educational Action Research* 1 (1), 7-24
- Carr, W. & Kemmis, S. (1986). *Becoming critical: education, knowledge and action research*. Lewes, Falmer.
- Crain, W. (2010). *Theories of development: Concepts and applications*, 6th ed. Upper Saddle River, New Jersey: Prentice Hall.
- De Lisi, R. & Golbeck, S.L. (1999). Implications of Piagetian theory for peer learning. In A.M. O'Donnell & A. King (eds.), *Cognitive perspectives on peer learning*, Mahwah, New Jersey: Lawrence Erlbaum, 3-37.
- Dysthe, O. (1995). *Det flerspråkliga klassrummet*. Lund: Studentlitteratur.
- Efron, S.E. & Ravid, R. (2013). *Action Research in education: A practical guide*. New York: The Guilford Press.
- Gillen, J. (2000). Versions of Vygotsky. *British Journal of Educational Studies* 48, 183-198.
- Hien, T.T.T. (2009). Why is action research suitable for education? *VNU Journal of Science, Foreign Languages* 25, 97-106.
- Hogan, D.M. & Tudge, J.R. (1999). Implications of Vygotsky's theory for peer learning. In A.M. O'Donnell & A. King (eds.), *Cognitive perspectives on peer learning*, Mahwah, New Jersey: Lawrence Erlbaum, 39-65.
- Håkman, E. (2015). *Vattenvana - En studie av siminlärningsmetodik för elever med ovana vid vatten*. C-essay, University of Gothenburg.
- Imsen, G. (2000). *Elevens värld: introduktion till pedagogisk psykologi*. Lund: Studentlitteratur.
- Kemmis, S. & McTaggart, R. (2005). Participatory Action Research: Communicative action and the public sphere. In N.K. Denzin and Y.S. Lincoln (eds.), *The SAGE handbook of qualitative research*, 3rd ed. London: SAGE Publications.
- Kraepelien-Strid, E. (2007). Simkunnighet är viktigt, eller...? Larsson, H. & Meckbach, J. (red.), *Idrottsdidaktiska utmaningar*. Stockholm: Liber AB.
- Naylor, S. & Keogh, B. (1999). Constructivism in classroom: Theory into practice. *Journal of science teacher education* 10, 93-106.
- Newman, F. and Holzman, L. (1993). *Lev Vygotsky: Revolutionary Scientist*. London: Routledge.
- O'Brien, R. (1998). *An overview of the methodological approach of action research*. Faculty of Information Studies, University of Toronto.

- Piaget, J. (1967). *Biology and Knowledge*. Paris: Gallimard.
- Piaget, J. (1970). *Logic and Psychology*. NY: Basic Books.
- Piaget, J. (1985). *The equilibration of cognitive structures: The central problem in intellectual development*. Chicago: University of Chicago Press.
- Radford, L. & Roth, W. (2011). Intercorporeality and ethical commitment: An Activity Perspective on Classroom Interaction. *Educational Studies in Mathematics* 77, 227–245.
- Roth, W. & Lee, Y. (2007). Vygotsky's Neglected Legacy: Cultural-Historical Activity Theory. *Review of Educational Research* 77, 186–232.
- Roth, W. & Radford L. (2010). Re/Thinking the Zone of Proximal Development Symmetrically. *Mind, Culture and Activity* 17, 299–307.
- Sagor, R. (2000). *Guiding school improvement with Action Research*. ASCD.
- Sjödén, C. (2008). *Simlärarboken*, 1. uppl. Stockholm: SISU idrottsböcker.
- Skolverket Lgr 11. (2011). *Läroplan för grundskolan, förskoleklassen och fritidshemmet 2011*. Stockholm: Skolverket.
- Svenska Livräddningssällskapet (2014). *Svenska livräddningssällskapets tolkning av simning och livräddning i LGR11*. 2014-01.
- Säljö, R. (2005). *Lärande i praktiken. Ett sociokulturellt perspektiv*. Stockholm: Norstedts förlag.
- Von Glasersfeld, E. (1989). Cognition, construction of knowledge, and teaching. *Synthese* 80, 121-140.
- Von Glasersfeld, E. (1995). *Radical constructivism: A way of knowing and learning*. Washington, DC: Falmer.
- Vygotsky, L.S. (1978). Tool and symbol in child development. In M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (eds.), *Mind in society: The development of higher psychological processes*. Cambridge, Mass: Harvard University Press.
- Wood, D., Bruner, J. & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Child Psychiatry* 17, 89–100.

8. Appendix

8.1. The 5 Steps model

Preparations

An appropriate level of practice can be determined in collaboration with the students by exemplifying a few exercises in the presentation of each target goal; the 5 Steps model allows for the students to estimate their own levels of proficiency, and to gather insight into what form of exercises and activities that can be regarded as suitable for their particular learning requirements.

As levels of preexisting in-water confidence and swimming proficiency can vary from student to student, the model is designed to be customizable in order to account for student individualities and skill-base symmetry. A student with the technical proficiency equivalent of Step 3 who is still having a hard time staying relaxed in the water, e.g. due to the fear of falling below the surface, could benefit greatly from the basic, in-water confidence building exercises from Step 1. The same scenario applies to a student used to playing and jumping in a range of water depths which constitutes a target goal for Step 3, yet still lacks the efficient swimming technique needed to fulfill the requirements – for this student to work on the basic swimming technique (Step 2) could provide enough momentum to even out the differences. The exercises and activities presented in each of the 5 Steps should be seen as measurements of relevant in-water proficiency and technical skill for each succession of the learning process. On the other hand, the model is still open for alteration and modification in order to fit the individual needs and requirements of the students, and the particular learning scenario.

Step 1 – Basic in-water confidence

The first step for students with few – or unfavorable – experiences of in-water scenarios is to engage in simple exercises and games in a shallow water setting. This way, it is possible to shift the focus from swimming as a skill, to where the students can accustom themselves to being in the water. The games should be created around the following set of activities, according to *Svenska Livräddningssällskapets Tolkning Av Simning Och Livräddning LGR 11* (SLS, 2014):

- Dip your head under the water:
 - Blow bubbles or brew coffee (breathe in over and blow out under the water).
 - Talk to a friend under the water.
 - Search for an object (e.g. a coin) under the water by looking under the water.
 - Put a hoola hoop on the surface, dive under the water and swim up through it.
 - Pick up things from the bottom (rings or coins).
 - Try to sit or lie down on the bottom.
 - Try forward- or backward rolls, or handstands on the bottom.
- Jump into the water from the side of the pool or a dock:
 - With or without a floatation device in your hands.
 - Try different forms of jumps (spin, jump backwards, cannonball).
 - Have a friend in the water to spot you,
- Different movements in the water
 - Push off from the side or bottom of the pool, arms extended forwards, glide.
 - With your head over or under the surface.

- With or without a floatation device in your hands.
 - On your front or back.
 - Using leg kicks while floating on your front or back.
 - Paddle with your arms while floating on your front or back.
- In-water balancing.
 - Try somersaults, or rolls from front to back while floating.
 - Try handstands on the bottom of the pool.
- In-water orientation.
 - Games involving movement (walk/glide/swim) in a fairly large area.
 - In-water tag (dip your head if you get tagged, to get back in the game).
- Floating on the front or back.
 - Relax, lean forwards/back, feet on the bottom, feel the buoyancy of the water.
 - Floating on your front, breathe easy.
 - Holding a kick board, arms extended, head over the water.
 - Hold the side of the pool with one or two hands.
 - Lean your body forwards, face below the surface, look at the bottom.
 - Take a deep breath, exhale slowly under the water.
 - Use your arms and legs for balance.
 - Floating on your back, breathe easy.
 - Lean your head back into the water and look at the ceiling.
 - Keep your arms and legs apart for balance.
 - Paddle gently with your legs.
 - Holding a kick board in front of your chest.
 - Holding the side of the pool with one or two hands.

Target goal: Unhindered performance of the above points.

Step 2 – Basic shallow water technique

The deciding factor for students to be able to relax and remain in the water for longer periods of time is good basic technique. Breaststroke is taught using a split method; arm strokes and leg kicks are practiced separately following the model progression for breast- and backstroke. This strengthens the awareness as well as the execution of the leg kick, allowing for a smooth transition towards the ultimate skill of life saving, which requires a strong, independent leg kick. Breast- and backstroke techniques should be taught in a shallow water setting. Emphasize calm, relaxed breathing and a distinct, long glide phase.

- Breaststroke.
 - Arm strokes:
 - Practice while standing still in the water.
 - Try to draw the shape of a heart in the water, using your hands.
 - Both hands should be in sight throughout the entire arm stroke.

Technique: Pull your arms back from an extended position moving your hands apart – pull your hands in towards your chest as they move past your shoulders – collect your hands in front of your chest and extend your arms – glide.

- Leg kicks:
 - Holding on to the side of the pool.
 - Practice with or without the support of a kick board.

- Try circling your feet in the water by bending and stretching.

Technique: Bend your legs and pull your heels towards your behind – open your legs with your feet angled out with your toes to the sides – kick/stretch your legs until they clap together – glide.

- Combined:
 - Practice gliding as far as possible after every stroke
 - Find the rhythm:
 - While floating, perform one legkick, float, and then an arm stroke.
 - Swim with two leg kicks and one arm stroke.

Technique:

Start in an extended floating position – initiate the arm pull – pull your legs in as your hands are collected – extend your arms forwards – kick your legs as your arms reach full extension – glide.

- Backstroke:
 - Arm strokes:
 - Likesided arm strokes.
 - Practice while standing still in the water.
 - Float with your legs straight/relaxed, look at the ceiling for balance.

Technique: Pull your elbows and forearms to the sides and up towards your shoulders, leading with your little finger – rotate your hands to have your palms face your feet as they reach your shoulders – push your hands down towards your hips while extending your arms – glide with your arms straight, along the side of your body.

- Leg kick:
 - Perform backstroke leg kicks the same way as breaststroke leg kicks
- Combines:
 - Practice gliding after every stroke.
 - Perform arm strokes and leg kicks simultaneously (jelly fish swim).
 - Swim using your leg kick only, arms by your side for support.

Technique: See Breaststroke above.

Target goal: Correct breast- and backstroke technique as well as the ability to swim 100 meters, 25 of which in a backstroke position, and to stay under the water.

Step 3 – Deep water safety

As the target goals for Step 1 and 2 are met, the transition to deep water practice is possible. In order for the students to accustom themselves to the increased exposure of the new scenario easier techniques from Step 1 are revisited, emphasizing energy efficient and calm flotation through treading water and floating, using minimal energy output. The objective is to induce safety through skill in excessive water depths. In addition to this, the technical breast- and backstroke practice continues, focusing on perfecting the coordination of the combined techniques as well as the power and efficiency of the backstroke leg kick.

- Floating on your front and back.
 - Subtle movements of the hands and forearms provide balance in the water.
 - Relaxed and calm breathing.
- Tread water.
 - Hold the side of the pool or a kick board for support.
 - Sculling: sweep your arms, strong wrists and hands, feel the water move.
 - Tread with the sole of your foot facing the bottom, pushing down.
 - Like sided leg movements / alternating one leg at a time (eggbeater technique).
 - Tread on the spot or moving forwards slightly.
 - Try different arm positions (overhead, in front of your chest)
- Breast- and backstroke.
 - Continuation as in Step 2.

Target goal: Unhindered performance of Step 1 and 2 in deep water. The ability to stay relaxed and calm in the water, using the techniques defined above.

Step 4 – In-water confidence

Possessing a good foundational technique, breast- and backstroke skills, as well as water awareness and safe deep water technique, the students are ready to build further on their existing skill base and challenge themselves further in the water. The objective of Step 3 is to meet the requirement of 200 meters, and to strengthen the overall in-water proficiency in preparation for the lifesaving practice in Step 5. At this point, different styles of swimming – outside of the basic breast- and backstroke – can be introduced.

- Jump/dive from the side of the pool.
 - Try different forms of jumps (spin, flip).
 - Start treading water or swimming as soon as you land in the water.
- Dive from the surface.
 - Perform half a forward roll, extend your arms towards the bottom, kick off with your legs.
 - Pick up objects from the bottom.
- Swim shorter distances below the surface (5> meters).
 - Use techniques for diving combined with breaststroke technique.
 - Try gliding, push off from the wall.
 - Breathe out under the water.
- The sport of swimming – try different styles.
 - Freestyle/crawl.
 - Proper backstroke.
 - Butterfly.
- Swim test: 200 meters, 50 of which in a backstroke position.

Target goal: Confidence over, in and under the water, in the form of safe and secure technique and energy maintenance in all water related movements and maneuvers. This include a correct, energy efficient breast- and backstroke technique for mid-distance swimming, as well as a proper execution of the swim test.

Step 5 – Lifesaving (grade 6-9)

Step 5 is based on the SLS requirement for grade 6-9 regarding in- and around water lifesaving knowledge and skill requiring students to be able to “handle water related emergencies in scenarios particular to the four seasons, using rescue equipment” (SLS, 2014, p. 3, 5). Focus is on general knowledge regarding safety precautions and action of emergency rescue in, and in the proximity of water, relevant to seasons. Swimming pool training should be complemented with the outdoor swimming, if possible, in order to emphasize the authenticity of the water related situations, as students preferably should be presented the opportunity to practice swimming and lifesaving in a variety of water conditions, recreating different scenarios.

- Fully clothed/life vest indoor and outdoor swimming.
- Swimming, boat and ice related safety concerns.
- Winter water hazards and security, over and in water.
- Water related first aid.
- CPR (Cardio Pulmonary Resuscitation) using heart-starter device AED.
- Airway block in unconscious person (SLS, 2011).

In order to attempt and practice a genuine in-water lifesaving scenario, a training course can be arranged:

“Jump from the side of the pool or a dock, holding a lifebuoy and proceed to swim 25 meters holding the lifebuoy. Salvage rescue dive a training dummy or an object of relative size at 1.80 meters water depth, followed by a 25 meter tow of a friend placed in the lifebuoy. Pull the person out of the water from the pool side or the dock. Make airways clear, demonstrate mouth to mouth resuscitation and place the person in a stable sideways position. Alert. The course is to be completed without stops. The salvage rescue dive is allowed multiple attempts.” (SLS, 2011, p. 5)

After complete, correct performance of the 5 Steps, where all target goal requirements have been met, the student will display a high level of in-water confidence; safety in and in the proximity of water, high foundational skill proficiency, effective and energy efficient breast- and backstroke technique, as well as an in-water lifesaving capacity. Through the process of working successively with progressive confidence and technique building, where every new exercise or activity is built from the ground up, presenting more advanced and more challenging versions based on the existing knowledge, the students can make smooth transitions from step to step to eventually meet the ultimate standard of in-water confidence. This process also allows the students to experience and realize their progressive development.

8.2. Plan of practical exercises (Cycle 1)

100 min (10 min transition time)

5 min warm-up

40 min games

Dip your head under the water:

- Blow bubbles or brew coffee (breathe in over and blow out under the water).

- Talk to a friend under the water.
- Search for an object (e.g. a coin) under the water by looking under the water.
- Put a hoola hoop on the surface, dive under the water and swim up through it.
- Pick up things from the bottom (rings or coins).
- Try to sit or lie down on the bottom.
- Try forward- or backward rolls, or handstands on the bottom.

Jump into the water from the side of the pool:

- Have a friend in the water to spot you,
- Try different forms of jumps (spin, jump backwards, cannonball).

15 min floating in shallow water

Preparatory exercises for floating on back- or front.

Back:

Think about breathing slowly and relax your entire body, your body will then become lighter and float without any effort made. Use arms and legs for balance.

Both hands holding the side of the pool:

- Facing the side of the pool.
- Lean your head back into the water and look at the ceiling. Keep your legs apart.
- Push off from the side when you are floating safely and spread your arms for balance.

One hand on the side of the pool:

- With your shoulder facing the side of the pool.
- Lean your head and body back, spread your arms and legs apart, look at the ceiling.
- Paddle gently with your legs to maintain a horizontal position.
- Release the side when you feel steady and comfortable.

Front:

Think about breathing out slowly under the water and let your body relax with your face just under the water. Use arms and legs for balance.

Both hands holding the side of the pool:

- Arms extended over your head.
- Relax and lean your body forwards with your legs apart, look at the bottom.
- Push off from the side when you are floating safely.

15 min treading water in shallow to medium deep water

Arms:

- Sculling.
- Standing in shallow water, arms extended from your side, sweeping back and forth.
- Keep your wrists and hands tense, feel the water move with your strokes.

Legs:

Holding the side of the pool:

- In deeper water, tread downwards with the sole of your foot and push off.
- Like-sided motions with both legs, like breast- or backstroke kicks.
- The egg-beater technique, with each leg moving independently.

Combined:

- Start by holding the side of the pool, only using the leg kick to stay afloat.
- When the kick feels safe and steady, push off from the side and add arm movements.
- Breathe slowly and focus on large, effective movements.

15 min technique practice in shallow water

Leg kick on the front and back.

Technique: Bend your legs and pull your heels towards your behind – open your legs with your feet angled out with your toes to the sides – kick/stretch your legs until they clap together – glide.

Hands holding the side of the pool:

- Focus on a correct, effective leg kick with a powerful release.

Holding a kick board:

- Lie in floating position holding the kick board with your arms extended (breaststroke).
- Lie in floating position holding the kick board over your chest (backstroke).
- Perform a leg kick, emphasize the glide phase, legs extended.

Arm technique (breaststroke):

Technique: Pull your arms back from an extended position moving your hands apart – pull your hands in towards your chest as they move past your shoulders – collect your hands in front of your chest and extend your arms – glide.

Standing on the bottom:

- Focus on correct and effective arm strokes emphasizing a powerful pulling phase.
- Your arms should move as to draw the shape of heart in the water.
- You should be able to see your hands during the whole arm stroke.

Movement:

- Move your body using only arm strokes, dragging your feet on the bottom.
- Start in the floating position.

Combined technique:

Breaststroke:

Start in the floating position with your arms extended as in the glide phase.

Find the rhythm:

- One movement at a time (first a leg kick and then an arm stroke).
- Swim with two leg kicks and one arm stroke.
- Focus on gliding as far as possible after every stroke.

Backstroke:

Start in the floating position with your arms at your sides for support.

- Perform like sided arm strokes and leg kicks simultaneously, swim like a jelly-fish.
- Extend your whole body during the glide phase.

8.3. Plan of practical exercises (Cycle 2)

100 min (10 min transition time)

20 min warm-up games

Dip your head under the water:

- Put a hoola hoop on the surface, dive under the water and swim up through it.
- Try to sit or lie down on the bottom.
- Try forward- or backward rolls, or handstands on the bottom.

Diving:

Technique:

- Push off from the bottom / use a leg kick, pull your feet to your behind, rotate forwards.
- Extend your arms towards the bottom, swim down using breaststroke leg kicks.
- Emphasize a full 180 degree rotation before initiating the dive.

- Pick up things from the bottom (rings or coins).
- Hold your breath under the water (Level 1).
- Dive down and swim to the bottom (Level 1 and 2).

Jump into the water from the side of the pool:

- Try different forms of jumps (spin, jump backwards, cannonball).
- Dive into the pool (Level 1).

20 min floating

Preparatory exercises for floating on back- or front.

Back:

Think about breathing slowly and relax your entire body, your body will then become lighter and float without any effort made. Use arms and legs for balance.

Both hands holding the side of the pool:

- Facing the side of the pool.

- Lean your head back into the water and look at the ceiling. Keep your legs apart.
- Push off from the side when you are floating safely and spread your arms for balance.

One hand on the side of the pool:

- With your shoulder facing the side of the pool.
- Lean your head and body back, spread your arms and legs apart, look at the ceiling.
- Paddle gently with your legs to maintain a horizontal position.
- Release the side when you feel steady and comfortable.

Holding a kick board in front of your chest:

- Stay not too far away from the side of the pool.
- Lean head and body back holding the kick board with your elbows flared out.
- Gently paddle with your legs and feet to glide backwards in the water.

Float freely:

- Aim to maintain a horizontal body position in the water.
- Position your head with your ears below the water, raising your chin looking back.
- Arms extended out to the sides and over your head for balance in the water.
- Arch your back slightly, raising your chest and core.
- Bend your legs slightly.
- Gently paddle your legs and sweep with your arms to find your balance in the water.

Front:

Think about breathing out slowly under the water and let your body relax with your face just under the water. Use arms and legs for balance.

Both hands holding the side of the pool:

- Arms extended over your head.
- Relax and lean your body forwards with your legs apart, look at the bottom.
- Push off from the side when you are floating safely.

Holding a kick board in front of your chest:

- Lean your body forward, arms extended, holding the kick board in front of your head.
- Look at the bottom.
- Gently paddle with your legs and feet to glide forwards in the water.

Float freely:

- Aim to maintain an even, horizontal body position in the water.
- Take a deep breath, exhale slowly under the water.
- Look at the bottom with your face and ears below the surface.
- Extend your arms in front of your head and out to the sides for balance.
- Gently paddle with your legs.

20 min treading water

Arms (Level 3):

- Sculling.
- Standing in shallow water, arms extended from your side, sweeping back and forth.
- Keep your wrists and hands tense, feel the water move with your strokes.

Legs:

Holding the side of the pool:

- In deeper water, tread downwards with the sole of your foot and push off.
- Like-sided motions with both legs, like breast- or backstroke kicks.
- The egg-beater technique, with each leg moving independently.

Holding a kick board:

- Stay in a vertical position, holding the kick board in front of your chest.
- Use large, powerful leg movements, focusing on technique and breathing.
- Gradually let go of the kick board as you start feeling confident.
- Grab a hold again for support.

Combined:

- Start by holding the pool side or a kick board, only using the leg kick to stay afloat.
- When the kick feels safe and steady, push off from the side and add arm movements.
- Breathe slowly and focus on large, effective movements.
- Tread with like sided leg kicks or using the eggbeater technique (one leg at a time).
- Use the gentle sweeping of your arms for balance in the water.

30 min technique practice

Leg kick on the front and back:

Technique: Bend your legs and pull your heels towards your behind – open your legs with your feet angled out with your toes to the sides – kick/stretch your legs until they clap together – glide.

Hands holding the side of the pool:

- Focus on a correct, effective leg kick with a powerful release.

Holding a kick board:

- Lie in floating position holding the kick board with your arms extended (breaststroke).
- Lie in floating position holding the kick board over your chest (backstroke).
- Focus on a correct pull and split of your legs, pushing off until they clap together.
- Perform a leg kick, emphasize the glide phase, legs extended.

Breaststroke:

Arm technique:

Technique: Pull your arms back from an extended position moving your hands apart – pull your hands in towards your chest as they move past your shoulders – collect your hands in front of your chest and extend your arms – glide.

Standing on the bottom or with the support of a kick board under your core

- Focus on correct and effective arm strokes emphasizing a powerful pulling phase.
- Your arms should move as to draw the shape of heart in the water.
- You should be able to see your hands during the whole arm stroke.
- Push and extend your arms forward for the glide phase, then hold for a second.

Movement:

- Move your body using only arm strokes, dragging your feet on the bottom.
- Start in the floating position.

Start in the floating position with your arms extended as in the glide phase.

Find the rhythm:

- One movement at a time (first a leg kick and then an arm stroke).
- Swim with two leg kicks and one arm stroke.
- Emphasize full execution in arm and leg movements.
- Focus on gliding as far as possible after every stroke.
- Exhale under the water.

Backstroke:

Start in the floating position, hands behind your head or extended to the side for support.

- Perform like sided arm strokes and leg kicks simultaneously, swim like a jelly-fish.
- Emphasize full execution in arm and leg movements.
- Extend your whole body during the glide phase.