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INFLUENCING TEACHING STYLES FOR A BETTER LEARNING EXPERIENCE: HOW UNESCO-IHE USES DIDACTIC TRAINING

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UNESCO-IHE Institute for Water Education is an international post-graduate education Institute situated in Delft, the Netherlands, which implements MSc programs, PhD programs and a number of short courses for professionals in the field of water and environment. As part of UNESCO, the vision of the institute is to contribute to “a world in which people manage their water and environmental resources in a sustainable manner, and in which all sectors of society, particularly the poor, can enjoy the benefits of basic services”. The development relevance of the Institute is also stated in the Institute’s mission to “contribute to the education and training of professionals and to build the capacity of sector organizations, knowledge centers and other institutions active in the fields of water, the environment and infrastructure in developing countries and countries in transition”. UNESCO-IHE has been in the business of water education for fifty five years (until 2003 it was known as IHE-Delft). Over this period of more than half a century, the institute has evolved in its character in a number of ways. The institute initially started with the scope of hydraulic engineering, and later expanded into the fields of sanitary engineering, drinking water and later into environmental engineering. From the onset the focus has been on training professionals from the so-called global-south, contributing to its change and growth. A decision taken at the 31st general conference of UNESCO (2001) transformed UNESCO-IHE into a truly international institute which became operational in 2003, making UNESCO-IHE the only institution in the UN system authorized to confer accredited MSc degrees. By 2012, UNESCO-IHE has graduated nearly 15,000 water professionals from some 162 countries. This year it has 372 MSc candidates (two batches 2010-2012 and 2011-2013) from 72 countries. Currently it also hosts some 130 PhD researchers and some 20 post-docs, with a lively research program. Every year approximately 700 individuals participate in short-courses conducted by the institute. Currently UNESCO-IHE employs more than 90 faculty members from across the globe who conduct teaching and research supervision of MSc and PhD candidates.



Objectives and Challenges

The subject matter of UNESCO-IHE’s education, namely that of water and environmental issues, is by nature broad, local-specific, unique and multidisciplinary. Solving water problems calls for skills that go beyond the knowledge that could be expected to be obtained by studying a single discipline, as well as needing well-developed integrative skills and a mix of competencies. Largely due to tradition, world-wide higher education programs related to hydraulics and hydrology still remain very much ‘discipline-oriented’ entities: They focus mostly on the fundamental knowledge of processes, theories and models, but often pay little attention to training students in the art of applying these to real-world problems[3].



UNESCO-IHE is an active Institute Member of IAHR, which will be host for the IAHR World Congress in The Hague in 2015. Prof Arthur Mynett is Head of the Department of Water Science Engineering at UNESCO-IHE and is an IAHR Council Member. Dr Ioana Popescu is Senior Lecturer in Hydroinformatics and Chair of the IAHR Education and Professional Development Committee, and Dmitiri Solomatine, Professor of Hydroinformatics is a member of the Hydroinformatics Committee.

G TOWARDS IMPROVING WATER EDUCATION



UNESCO-IHE has recognized the importance of providing an education that produces graduates who are equipped to solve real-world water problems and continually attempts to improve the problem-oriented nature of its academic programs.

The knowledge base in water-related disciplines is increasing rapidly. New knowledge is appearing at a rapid rate making the time after which old knowledge becomes outdated very short. The required breadth of knowledge for success as a water professional is increasing too. It is no longer sufficient to be an expert who 'qualified' at some point in the profession. Continuous learning has become an extremely important attribute of a successful water professional and to enable this, graduates of higher-

degree programs need to possess a different mix of knowledge, skills and attitude than traditionally expected. For example, the skill and positive attitude for continual learning -- or 'to learn how to learn' has become important in constructing knowledge. Developing 'personal competencies' to learn through and within practice is ('learning by doing') is crucial to ensure professional success[5].

The vast majority of these students are mid-career professionals who, upon graduation, return to their countries and often play important roles in shaping policy and practice in the water sector in these countries. The fact that the graduates of UNESCO-IHE end up working in diverse geographical, economic and

cultural settings makes it even more important to focus their education on the development of skills and competencies.

Among the faculty of UNESCO-IHE there is a general consensus on the importance of developing life-long skills and attitude for continuous and 'on-the-job' learning. A number of steps towards implementing a 'learning atmosphere'

Continuous learning has become an extremely important attribute of a successful water professional

that is conducive for this goal has been taken in recent years. For example classroom facilities were transformed to structures that are conducive for group-studies and interactive activities and a number of small-group workplaces are made available throughout the building. Each student is now provided with a laptop computer to use with the wireless network throughout the institute, including the classrooms. Together with a dynamic learning management system and personal learning environments this infrastructure provides a basis to foster communication, teamwork and learning [3]. However, most fundamental changes are affected at the level of teachers. We are attempting to positively influence teaching styles of the teachers, which we trust is the cornerstone for the scheme of providing an education that matches with the challenges in the water-world.

Starting with Teachers

As stated above it is essential that UNESCO-IHE graduates are able to keep abreast of the latest knowledge in their field and are able to work in teams efficiently and effectively. For optimal results, these real-world needs have to be reflected and even mimicked in didactical approaches. To instill in the student an ability for active learning, the faculty members of

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UNESCO-IHE are offered training on didactics based on the principal of "constructive alignment" which starts with the notion that the learner constructs his or her own learning through relevant learning activities[1].

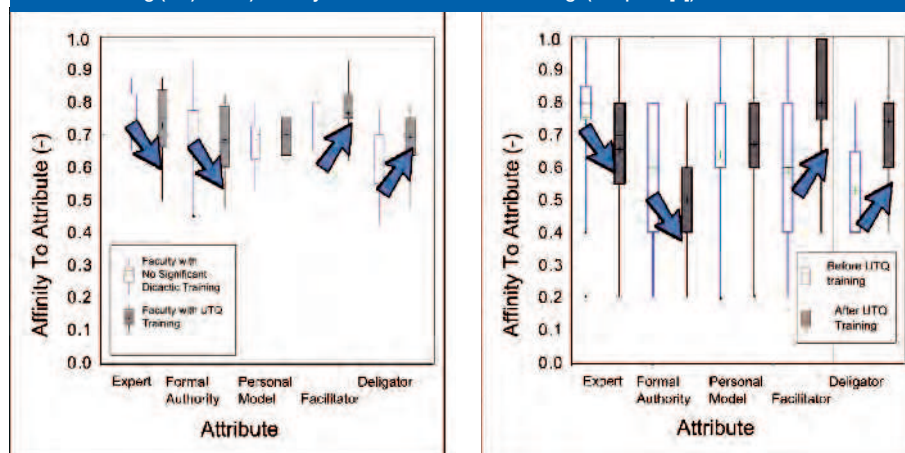
The need for shifting the approach for teaching can be expressed using the five teaching styles proposed by Anthony F. Grasha, namely: expert, formal authority, personal model, facilitator and delegator[2].

The expert teacher is mainly concerned that the students receive correct information and are well prepared in their discipline. A main disadvantage is that it focuses more on the outcome than on developing the thought process leading to that outcome. The formal authority teacher focuses on following the relevant standards of practice in the concerned discipline. A personal model teacher focuses on setting an example rather than prescribing. The feeling of inadequacy if unable to live up to the standards of the instructor is a downside of this approach. Lastly, the facilitator and delegator styles portray the teacher as a guide, encouraging students to explore knowledge. Less experienced students as well as those unused to this approach may feel confused and directionless with this autonomy.

The traditional university teaching had a substantial focus on expert/formal-authority type of teaching where teacher is seen as the main source of knowledge and factual information. On the other hand Facilitator/Delegator styles portray the teacher as a guide, encouraging students to explore knowledge, which encourages developing skills and aptitudes towards continued learning. Therefore using Grasha's framework, the needed shift can be expressed as evolving more towards the facilitator/delegator styles away from the expert/formal-authority styles.

In order to achieve this shift, and starting from 2010, faculty members of UNESCO-IHE are currently offered a didactic certification program named University Teaching Qualification (UTQ), a programme aimed to develop the didactic skills of the teaching staff in the direction of facilitating active learning in higher education. The UTQ program focuses on constructive alignment where the student constructs her/his own learning through relevant learning activities. It stimulates the lecturer to create a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. In other words, the UTQ training intends to stimulate UNESCO-IHE faculty to develop facilitator/delegator teaching styles.

Figure: "Learning to give student space to learn" The difference of expert/formal authority and facilitator/delegator traits among a) Faculty with UTQ training and those who did not have significant didactic training (left) and b) Faculty before and after UTQ training. (Adapted [3])



Giving Space to Learn

The main objective of the UTQ program was to train faculty members to be better facilitators and delegators. After running the UTQ program for two years and producing about 20 graduates, we were interested to know the impact of the program. An important logical step in this direction is to understand the profile of the faculty in relation to UTQ and didactic training in general. To attempt this, we conducted two surveys among the faculty members of UNESCO-IHE. The first was based on a popular survey instrument proposed by Anthony F. Grasha comprising of 40 statements (Teaching Styles Inventory: Version 3.0, Grasha, 1996) for which the respondents have to give a rating from a scale from 1 to 5. Example statements are "I typically show students how and what to do in order to master course content" and "Students might describe me as a 'storehouse of knowledge' who dispenses the facts, principles, and concepts they need". Grasha's teaching style inventory allows translating the results into an affinity rating for each teaching style. We supplemented the first survey with a follow-up among the 20 UTQ graduates. We used respondents' own assessment of their affinity to each of the five teaching-styles before and after UTQ training.

The two surveys show a remarkably similar outcome (See figure). In essence we have become more facilitators and delegators after undergoing the University Teaching Qualification training. This is the intended result of the UTQ training.

Discussion

What the UTQ training program at UNESCO-IHE is proven to have achieved is a shift from an expert/formal authority style towards a more facil-

itator/delegator style as measured *from what teachers* think about their teaching styles. Needless to say that what really matters is whether this is really practiced by teachers in the classroom. While there is informal evidence that they do, it is very much necessary to conduct a formal study to confirm this. A much more complex subject is how this shift is perceived by the students. Being used to a learning experience in predominantly expert/formal-authority styles at the schools and universities in their home countries, some of our students might find it difficult to adjust to the 'new style' of learning. We are continuously exploring ways of obtaining concrete information on classroom experience both from the student and teacher perspective and to measure the effectiveness of the modern approaches to teaching in instilling in students the affinity and skills for life-long learning.

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