

## Review

# Exploring and evaluating the current style of teaching biology in Saudi Universities from teachers' points of view

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### Abstract

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The Saudi Arabia Ministry of Higher Education has established 24 universities across various cities in the Kingdom. The universities have the mandate of sustaining technological progress in both teaching and learning. The present study explores the statues of teaching in Saudi universities, focusing on Biology, a critical curriculum. The paper explores Biology teachers' points of view is several Saudi higher education institutions through questionnaires disseminated via emails. According to the findings, the current teaching methods are traditional and the teachers believe that it is critical to change it. This study also reviews how Biology has been taught in the Kingdom over the past, as well as how it is undertaken presently. In addition, some aspects of Biology teaching are considered, including the Biology curriculum and learning objectives in higher education biology.

**Keywords:** Higher education, Teaching style, Traditional learning, Electronic learning, Web 2.0 applications, Blended learning

## INTRODUCTION

E-learning as an avenue for learning and teaching is deemed as an alternative to the traditional systems. E-learning can generate knowledge via numerous academic activities in university environments. This study is critical as it aims to guide future strategic development initiatives in e-learning within Saudi higher education institutions, while enhancing policies and practices in pursuit of better student learning experiences. Based on a review of the developments witnessed in Saudi higher education, higher education advances quite rapidly.

According to Saleh (1986 p, 17), since 1987 to 1982, there was growth from a single institution with 21 students and 9 staff members, to seven institution hosting 63,563 students supported by 6,906 teaching staff. By 2013, the number of institutions had increased to 24 across the Kingdom of Saudi Arabia in order to meet

the increasing demands for higher learning.

Definition: The biology curriculum represents one of the compulsory curricula within the University of Al-Abaha, which students are expected to undertake in the course of their first academic year.

### Brief History of Biology Learning

In the past, Saudi higher institutions employed traditional methods in the course of Biology teaching. For instance, upon establishment in 1957, in the first Saudi University, the University of King Saud, students were learning in lecture halls in the traditional classroom style that involves memorization and recitation (King Saud University portal 2011). Lecturers would explain the subjects to students and the students would record notes

or refer to additional references available through the university library. Such a method is lecturer centered, with the lecturer recitation the material and the students acting as mere recipients. Consequently, there is limited connection between the instructor and the students, such that the learning process is entirely dependent on the lecturer, who effectively heaps information on the learners (Ballard and Bates 2008). Nevertheless, some lecturers may make use of teaching aids offering an opportunity for students to discuss the resources further with the instructor. The above method of instruction often concludes with the instructor enquiring whether the students have any outstanding, and the method is widespread in many nations (Fry 2009).

### **Current Biology Learning Practices**

At the end of the twentieth century, Biology teaching had become more vibrant, with interactions between instructors and learners increasing (Cochran-Smith et al. 2008). With the advancement of university education in Saudi Arabia, biology teachers as well as instructors in other fields have adopted teaching aids in the course of their teaching activities. The learning aids are used to facilitate the process of learning through better understanding of concepts being taught. Teaching aids may require help from students in their usage, with the learner observing and making conclusions based on relationships between the content and concepts taught (Shulman 2009; Brophy 2009). Such tools facilitate better understanding of resources. Consequently, such tools are frequently employed in scientific presentations and demonstrations, particularly in Biology, where appropriate devices are available. Often, only a few students may have access to the devices although it would be ideal if each student has access. Nevertheless, in many cases, two or three students may share a single device.

Presently, colleges that teach Biology have well-equipped laboratories, which ensure that what is taught in class is complemented by practical activities. Labs may host either fixed or flexible models, samples or living organisms, in addition to other visual aids in the form of movies or animations of organisms. Considering the global trends in technology adoption, Saudi universities are in the relatively early stages of integrating technologies such as computers and the Internet in communication and education through e-learning (Xu and Quaddus 2010). Some universities have made significant attempts to teach Biology by employing virtual labs in face of lack of services associated with current technologies. A lot of studies exist that underscore the importance of employing technology in the course of teaching Biology. For instance, according to Al-Khayat and Ajmi (2001), technology adoption facilitates

achievement of education objectives, sustains student interest and attention, improves awareness on the study subject, while improving attitude towards the activity in question overall. The above factors stress the importance of applying modern technology in teaching Biology. Similarly, Keengwe (2007) reports that technology in education may facilitate process of education for students at all levels and ages, while saving a lot of teaching resources, relieving burdens from teachers, and improving the quality of learning and teaching in general.

### **Biology Learning in Higher Education in Kingdom of Saudi Arabia**

Biology represents one of the subjects that students learn in university. In some higher institutions it is designated as mandatory. By studying Biology, students can later enroll in one of numerous Departments of Biology in the College of Science, and pursue a Bachelor degree in biological sciences. Classes teaching Biology will converge three hours a week on average. Teaching takes the form of traditional lectures within classrooms and undertaking experiments in the laboratory.

This section addresses the aims of studying Biology in KSA institutions of higher learning. This is because Biology is selected as the subject to be taught to ABU students via any web 2.0 application in the course of the present study. Biology has been selected as the test subject for a number of reasons, including, no research has been undertaken at ABU to attempt to establish another mode of learning Biology as opposed to the traditional learning style, and most of the investigations that have been carried out in the KSA have focused on computer software usage in the form of PowerPoint and virtual laboratories (Alzahrani, 2008; Alshahrani, 2009). In addition, the author established, while still a student at ABU College of Education, that Biology learning was restricted to the classroom and the lab, leading to a state of disinterest, considering that some lessons went on for over four hours. This is a mode of learning that was still in practice until 2012. The author further undertook an exploratory investigation to determine the teaching styles of Saudi teachers in biology classes.

### **Objectives of Learning Biology in Higher Education Institutions**

A goal generally refers to an intended result or state. According to Al-Khatib (2008), an educational goal represents changes in learner attitudes that arise out of interactions and experiences in educational settings. In addition, measures of behavior and knowledge can also account for educational goals. There are a set of defined goals in biology learning in the KSA (Department for Planning and Statistics 2010; KAU portal 2012). The

objectives address teachers, students, as well as the learning activity as a whole. The goal is to teach students what is in the biology curriculum while encouraging them to relate the knowledge to their daily lives. The following represent the primary objectives of teaching biology, as described by the Ministry of Higher Education.

1. Through logical thinking, discussions, research, and conclusions, familiarize and motivate students to grasp scientific concepts and facts, effectively nurturing a scientific spirit in the students.
2. Impart knowledge on students in the form of scientific concepts and facts that facilitate their understanding and explanation of phenomena based on scientific methods such as observation and experimentation.
3. Introduce learners to their environment and natural phenomena with the aim of encouraging them to channel science into innovations to both develop and sustain the same environment.

Moreover, the author believes that Web 2.0 applications use in learning aims to motivate students to learn collaboratively. Learning in groups facilitates numerous benefits including learning from one another (Cummings 2008; Chen 2008). In addition, learning biology via Web 2.0 applications and the Internet could facilitate the uncovering of critical scientific biological information.

### **Content and Concepts of the Higher Education Biology Curriculum**

Biology represents a fundamental scientific discipline. It features an extensive body of knowledge and science, based on discoveries, experiments and research activity.

Cavendish (2006 p. 184) points out that the word Biology has a Greek origin; bios, meaning life, and logos, meaning study. Consequently, biologists study life processes and living organisms, including characteristic aspects such as growth, evolution, genetics, origin, as well as anatomy. Biology was coined by Lamarck and Treviranus about 160 years ago (Melencion 2011). More aspects of organisms that biology as a field of study focusses on include; reproduction, feeding, types, and interactions with the surrounding biological and physical environment.

Biology is a broad subject and may be divided into various branches. These include micro-biology, zoology, botany, biochemistry, physiology, and ecology. Following advances in the study of science in general, in the nineteenth century, biology became more integrated with other fields of study, both in theory and in practice. Consequently, isolating biology from disciplines such as medicine and pharmacy is increasingly difficult, as they are equally critical in ensuring the well-being and survival of the human.

Biologists research on all forms of life (KAU portal 2012), and investigate the characteristics and behaviors

of living organisms. They are also interested in the origin of species, and how they evolve over time, how they interact among themselves and with their immediate environment. Therefore, biology encompasses numerous disciplines that are all associated with living organisms, which may greatly vary in type and size. For instance, some biologists study bacteria and viruses, others are interested in plants, while others investigate the activities of large mammals. The presents study focuses on research conducted at the College of Science in ABU. Bodies of research associated with biology at the College of Science include microbiology, the plant kingdom, plant physiology and anatomy, virology, mycology and anatomy.

### **Taking advantage of websites in the search for biological knowledge**

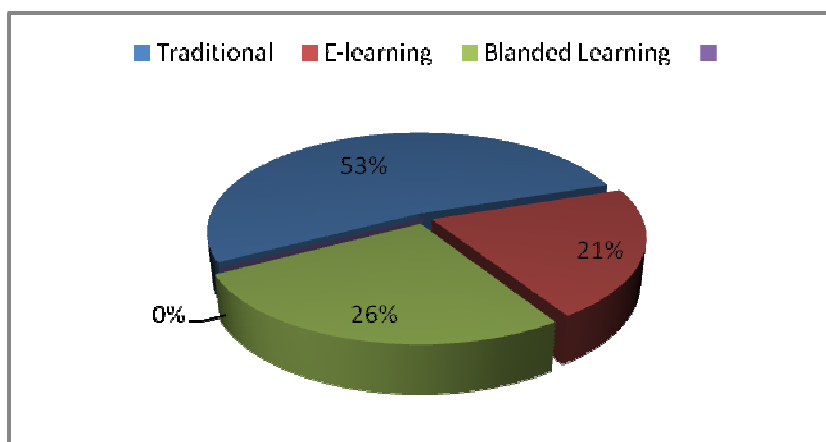
Visual/Audio materials: Students often upload visual or audio resources to support their ideas in the form of video clips, sound clips, or images. In addition, the Internet offers a tool for searching information corresponding to the biological topic under study. Treadaway and Smith (2010) and Sahlin and Botello (2007) contend that YouTube is the most popular video sharing site with numerous home-made video clips. Visual and audio resources are important for two primary reasons. Firstly, the current study applying with the biology teachers whom teach the biology curriculum. In addition, such resources can assist teachers in fulfilling the needs of learners based on their fundamental differences, while information is transmitted via sight and hearing senses as well.

### **FINDINGS AND RECOMMENDATIONS**

This study investigated the current teaching practices as far as Biology in Saudi Universities is concerned, based on teachers' points of view. According to the findings, web 2.0 applications could be employed as learning tools in universities and in ABU specifically.

The investigation took into account the views of 19 teachers, 12 male and 7 female, across 14 universities. Data was obtained via questionnaires, which were distributed through email. The results (Figure 2.1) revealed that 52.6% believed they were employing a traditional teaching style, while 21.1% had adopted e-learning in their biology teaching. Moreover, 26% were combining the two modes of teaching.

The above findings reveal that the 'traditional teaching style' is the most widespread across Saudi universities. In addition, e-learning is relatively weak in its application, and up to 50% of teachers Saudi universities are not conversant with it. Blended learning is also not widespread, so that up to half of the



**Figure 1.** Biology teachers' responses to their current teaching style at Saudi universities

staff is not familiar with it.

### Response of biology teachers

Universities stand a chance to benefit from the results of the present study. Decision makers in higher education institutions could nurture an environment that facilitates electronic teaching. This could be achieved by equipping class rooms with the Internet, laptops, and other electronic tools. In addition, teachers could be encouraged to make use of the same tools in the course of their teaching activities, in order to enhance the learning process.

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**Appendix:**

This Questionnaire designed to collect the data from sample of teachers in some of Saudi universities. The data will be used to identifying the current style of teaching biology and to find out which style of teaching is better to teach from the teachers' point of view.

Dear Participate.

The following questions aim to find out some information about teaching biology in the Saudi University. All of the information in this study will be used to the purpose of the research; your details will be saved and secured. Notes: in order to answer the questions, you required to select one choice of each question of the following multiple chooses, by tick the correct answers that you selected.

What is your teaching style in teaching biology?	Traditional ( )	E-learning ( )	Blended learning ( )
Have you ever used another method/approach to teaching biology	Yes ( )	No ( )	
Do you think that teaching biology in another way would be better?	Yes ( )	No ( )	Yes to somewhat ( )
Do you think that the Internet sites may add new information to the students in studying biology?	Yes ( )	No ( )	Yes to somewhat ( )
Do you have anything want to add?	..... .....		

Thank you for participating in the survey. The information you provide will assist us to identify which better teaching style in teaching biology, and to develop the teaching style in general among the Saudi university.

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