



## WIKI PLATFORM - AN IMPLEMENTATION FOR OPEN UNIVERSITY

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### Abstract:

**This paper presents an ongoing implementation of a portal for students at academic specialization Automation and Applied Informatics. Through a wiki type environment - namely Doku Wiki, we implemented a collaborative site through which encourage, on the one hand, the active participation of students in solving practical laboratory activities, and on the other hand, to increase students' curiosity read educational materials before their presentation and laboratory course. In future implementations we will try to include a compiler for developing applications in C / C + +, PHP and Java. A wiki is also a natural medium for a repository for essential programming language concepts and material for teaching concepts.**

**Key-Words: wiki, educational site, teaching strategies**

### Introduction

#### What is a wiki?

A wiki is a collaborative tool that allows many people to collaborate to create and edit online documents or web pages without specialized programming skills. Many types of media formats can be incorporated in a wiki such as streams of text, images, video and RSS. The person who establishes a wiki can give other users access password protected, limiting the number of people who can edit or create content. As each edit is documented, it is possible to see a chronological list of changes made to the content, and even return back to previous versions. Many wikis also contain a number of other collaboration tools such as message boards

to facilitate the process of collaboration.

Benefits of using wiki in the educational process:

- Students should not lose much time to learn how to use this technology because many features are familiar from word processors. Actually required only basic knowledge to use the wiki.

- Students can work asynchronously, i.e. not all students must be present at the same time or in the same place to provide support for team work

- Teachers can easily see that students bring their contribution in team work because each addition or modification of information is documented, making it easier for teachers evaluation.

- Similarly, the quality of student contributions can be easily monitored

- Students develop critical analysis skills and ability to constructively critique the work of their

- Many students reported that the results of group activities beyond what could be achieved individually

- The students reacted positively to the levels of support and fellowship that we have received from others Integrate students as part of the collaborative process. They also submitted that they began to know colleagues better in most cases.

- At first, many students expressed doubt about their ability to work collaboratively online and yet, at the end of activities, many were surprised and impressed by what they have achieved collectively. Issues to be highlighted:

- Students may not know how to work effectively in groups. It is therefore necessary

support and guidance from teachers

- Technical assistance should be provided to enable students to obtain skills in the effective use of wikis

- The first iteration of the class consumes significant time to develop structure, evaluating and creating technical resources support to students, but this meant that subsequent iterations spent minimal time for the introduction of information.

#### Types of wiki-based interaction

The term “wiki” is an acronym for “What I Know Is” [15]. In technology terms, a wiki is an editable website where users are able to create hyperlinks, insert images, and modify text [15] [8] [16]. The integration of wikis into lessons and assessments is grounded in the theory of social constructivism [8]. Wikis can be an effective instructional strategy because they promote learning by enhancing interaction and empowering students in the educational process. Three types of interaction are supported by wiki-based instruction: learner-content, learner-instructor, and learner-learner [11]. Wikis also provide additional opportunities outside the classroom setting for students to interact with the course content, each other, and the instructor. When compared to the learner-instructor interaction in the face-to-face context, instructors utilizing technology like wikis are more accessible to learners because the time for instruction and consulting is extended beyond the limited classroom instructional time. Finally, peer-peer interaction is facilitated by wikis through collaborative group assignments. Through wikis, students interpret, clarify, validate, and reflect on their understandings through sustained dialogue [6]. Through this dialogue, not only is the learning of primary content fostered, but also group behavior is improved, and group leadership skills are developed [11].

#### Collaboration tool

A wiki is an internet page that can be read and modified by any user. That means that if you are not satisfied with the content, you can make – and save

- changes to it. Using this Web 2.0 tool, you can both read and create content on a website

that can be for public or private use, depending on how you wish to restrict access to your students’ content.

Wikis, which first appeared in the 1990s, allow students to extend their learning in class, outside of class, and at any time that they are connected to the internet. According to [7], wikis promote an effective learning environment from a pedagogical standpoint, combining learning and motivation, group interaction and technology. All students can participate and it is not necessarily up to the professor to develop the content in order for wikis to function properly. Wikis are a social tool that promotes collaboration and a sense of excitement when students publish and immediately view the content they have created.

This adds to the sense of satisfaction students feel when they are autonomous and responsible for their own learning.

At the university level, professors use wikis because they are a useful tool for group work and promote collaboration between students, research and the exchange of information, all with the goal of producing knowledge. According to [10], wikis create a sense of teamwork and two-way exchange between professors and students, which reinforces students’ self-esteem and make them more productive. Professors can also create a forum for discussion and reflection with the students in order to improve their teaching strategies and to show students their feedback is valued.

Wikis allow you to publish a wide range of course-related resources (programs, supporting documents, further reading, etc.) in various formats (video-clips, podcasts, photos, diagrams, etc.).

Wikis exemplify a constructivist approach to learning, that is, a way of understanding learning as a process of construction that requires the learner to play an active role in the development of knowledge. When used for team projects, wikis emphasize the following activities:

- collaborative and cooperative learning
- the exchange of information between students
- the construction of knowledge

Students collaborate in order to create a product, but the fact that they must work together adds another element of motivation because the success of the final project depends on each group member's contribution. Wikis allow students to collaborate without being in the same geographical location.

Students must collectively reflect on the validity of their sources and of their knowledge in order to produce a quality product. They will feel a sense of satisfaction knowing that the content they produce is not for the sole consumption of the professor or their classmates but for the enjoyment of all users. Because their product will be viewed by a community of users, students will be interested in the task and motivated to produce quality work.

#### Open University

The Open University (OU) is a distance learning and research university founded by Royal Charter in the United Kingdom. The university is funded by a combination of student fees, contract income, and allocations for teaching and research by the higher education funding bodies in each of the four countries of the UK (England, Scotland, Wales and Northern Ireland).[17] It is notable for having an open entry policy, i.e. students' previous academic achievements are not taken into account for entry to most undergraduate courses.

Based on the concept of Open University, I tried to implement educational site for students at two-way communication with specialization Automation and Applied Informatics. In fact, I tried to use a method called e-learning to improve educational activity and to provide an effective way to present concepts so complex a specific technical faculties.

Wikis facilitate collaborative learning computer-based, that is, the development of technology-based collaboration in education and research [18]. This requires interaction and group work, and facilitates the sharing of knowledge and expertise within a community of learners [9]. Wikis permit asynchronous communication and collaborative learning between students and promotes cooperation rather than competition. Collaborative learning

becomes efficient when used in the context of a community where the emphasis is on practical [12]. A community-based practice consists of individuals engaged in collective learning in a shared domain. Thus learning becomes a collaborative process to join the group. Wikis can be used as platforms for knowledge-based community practice where knowledge can share interesting joint activities specific community discussions, etc. [12]. Wikis are a few fundamental elements of character-based knowledge to practical development projects, including a virtual presence, a variation of interactions between community members, valuable content, and connection to a topic of discussion, democratic participation and evolution over time [5].

In [13] list several possible educational uses of wikis:

Students can use a wiki to develop research projects, with the wiki serving as ongoing documentation of their work.

Students can add summaries of their thoughts from the prescribed readings, building a collaborative annotated bibliography on a wiki.

A wiki can be used for publishing course resources like syllabi and handouts, and students can edit and comment on these directly for all to see.

Teachers can use wikis as a knowledge base, enabling them to share reflections and thoughts regarding teaching practices, and allowing for versioning and documentation.

Wikis can be used to map concepts. They are useful for brainstorming, and editing a given wiki topic can produce a linked network of resources.

A wiki can be used as a presentation tool in place of conventional software, and students are able to directly comment on and revise the presentation content.

Wikis are tools for group authoring. Often group members collaborate on a document by emailing to each member of the group a file that each person edits on their computer, and some attempt is then made to coordinate the edits so that everyone's work is equally represented; using a wiki pulls the group members together and enables them to build and edit the document

on a single, central wiki page.

In [14] identifies four different forms of educational wikis:

1. Single-user wikis allow an individual to collect and edit his or her own thoughts using a Web-based environment.

2. Lab book wikis allow students to keep notes online with the added benefit of allowing them to be peer reviewed and changed by fellow students.

3. Collaborative writing wikis can be used by a team for joint writing.

4. Knowledge base wikis provide a knowledge repository for a group.

2 Using wikis for teaching a computer programming course

Computer programming is an introductory course in the study of computer programming, presenting concepts and concepts, and develop practical skills related to writing programs using the programming language C /C++. Until now necessary bibliographic materials uptake of such course consisted of books published in the past years [1] [2] and the lecture notes PDF of the slides presented in class. It was a challenge for students to master course content based only on the notes they took of the course, the source code shown in laboratory activities and slides provided on the course website.

To improve teaching strategy used in teaching this course, I started to put all teaching material on the wiki (Fig.1). We know that a course website posted a syllabus, outline, handouts, files, and assignment instructions.

This wiki contains detailed explanations of the material presented in the course, with special emphasis on explaining the source code examples. In addition contains proposed for solving problems and suggestions for the study of individual students by sending links to more complex materials. Editing the wiki is relatively simple and transparent, leading to understanding the overall idea of the material presented, but the blocking study in unnecessary details. It also encourages students to break the material into simple segments and then linking them dependency for understanding more advanced concepts. Possibility of including programming code proved to be very useful for most

theoretical part of the course. We used and inserting graphics where the process is more effective to explain some concepts.



Fig.1 Example of online compilation of a C++ code in codepad.org

Wiki of Computer Programming course started from February 2013 and now contains about 15% of the course material. Explanations appear both teachers and assistants and the students as semester progresses. The material will completely cover sheet discipline and goals to be achieved by presenting these notions of programming. Of course, any implementation of wikis, we don't have a deadline, but a reasonable stage of implementation.

### 3 Wiki-Based Instruction

This approach is not a substitute for learning by completing information from books, but is meant to be a teaching tool which is based on participative learning of students in the teaching process. Since the wiki is a collaborative tool, allowing teachers and assistants to involve students in the creation phase and especially to improve the contents. This course encourages students to come up with solutions and explanations presented well than new beginning. Of course those who are involved in this process are rewarded with points of evaluation laboratory work. We want the students to write their wiki as part of work activities at home. This way motivate and transform students into active participants in the educational process. And it is also a way of research to suggest ways to better understand the concepts as they are put in a position to explain to others. It is known that

humans are far better concepts you need to explain to others. This small experiment which we performed is well received by students and we want to continue and improve it further.

Wiki type software that we use (DokuWiki platform) provides simple ways for the administrator to view recent changes to the article and especially the opportunity to return to a previous version if changes made introduces concepts and examples without prior documentation. It is quite easy to monitor new articles added. Because there is a connection, it is easy to see which student has made some changes and here to reward good work, to warn the good little editing, or to note that some students were not involved in editing and participation in collaborative learning activities. Each access journals retain wiki page, not just editing. In this way, the teacher (or assistant) to ensure that the student has read the material presented in lecture / laboratory so that teaching will become more interactive and efficient. Thus we can deactivate that account type can allow anyone access to view the contents of the wiki without connection.

In addition to the course page C++ code presented as examples of programming concepts, we have included links to two online compiler source C++: <http://codepad.org/> (Fig.2) and <http://ideone.com/> (Fig.3). Thus students can try their online codes created and send links to solutions obtained.



The screenshot shows a web browser window at codepad.org. The code is as follows:

```

#include<iostream>
int main()
{
    int x,y;
    for(x=10;x<99;x++)
        y=(x*10)+10*x/10;
    if(y>10 && (x*y)%55) cout<<endl<< "cccc"\\n";
}
return 0;

```

The output shows the string "cccc" printed four times on separate lines.

Fig.2 Example of online compilation of a C++ source code in ideone.com



The screenshot shows a web browser window at ideone.com. The code is as follows:

```

language C++ (gcc-4.7.2)
date 9 seconds ago
link http://ideone.com/4R1U6
visibility public
Embed source code on your page
source code clone edit download copy to clipboard private users delete ShareThis report bug / make suggestion
1 // Check all two-digit numbers dialed numbers gathered figures from left to right they give 55.
2 #include<iostream>
3 int main(void)
4 {
5     int x,y;
6     for(x=10;x<99;x++)
7     {
8         y=(x*10)+10*x/10;
9         if(y>10 && (x*y)%55) add::cout<<endl<< "cccc"\\n";
10     }
11 }
clone edit download copy to clipboard private users delete
input / output show all hide all
updated with new input
#1: hide close input 2 seconds ago
result success time 0s memory 2896 kb returned value 0
input no
output:
cccc
cccc
cccc
cccc

```

Fig.3 Example of online compilation of a C++ source code in codepad.org

#### 4 Conclusion

I think this wiki page that I implement for teaching computing programming is just a start for an educational portal for my students at Automation and Applied Informatics. I will try to develop an online compiler for some programming languages, for use in educational process.

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