Learning Styles or Not? A Classroom Experience

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Poster Session

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1. Introduction
Secondary Teacher Assistant Researchers (STARs) is a program of Science Foundation Ireland (SFI) that supports research collaboration between secondary school teachers and SFI funded scientists and engineers. The main idea of the program is to disseminate new skills and knowledge to teachers, which can be passed on to their students, by providing them an opportunity to work in a research laboratory.

The goal of the project “Social Media to Support Learning Styles of Secondary Students in the Junior Cycle” was to explore whether a blended learning setting consisting of online learning materials matching different learning styles in addition to a face-to-face class results in a significant impact on the learning results.

2. Method
A literature review on learning styles [3, 5-14] made the teacher familiar with different concepts. The teacher developed learning materials matching different learning styles and a delivery strategy for the material [2].

To analyze the students’ learning styles (visual, aural, read/write or kinesthetic preferences), the VARK questionnaire [11] was used. The distribution of different learning styles in the class and the distribution to the different groups [1] are shown in Table 1.

Table 1: Learning Styles and learner groups

<table>
<thead>
<tr>
<th>Student</th>
<th>Learning Styles</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1, 2, 3, 4, 5</td>
<td>Aural</td>
<td>Aural</td>
</tr>
<tr>
<td>Student 6, 7, 8, 9, 10</td>
<td>Kinaesthetic</td>
<td>Kinaesthetic</td>
</tr>
<tr>
<td>Student 26, 27, 28, 29, 30</td>
<td>Visual</td>
<td>Visual</td>
</tr>
<tr>
<td>Student 11, 25</td>
<td>Aural / R</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 12, 14, 19, 23</td>
<td>Read/Write</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 13, 17</td>
<td>Aural</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 15, 18</td>
<td>Visual / Aural</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 16</td>
<td>Visual / Read-Write</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 20, 22</td>
<td>Visual / Kinaesthetic</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 21</td>
<td>Visual</td>
<td>Mix</td>
</tr>
<tr>
<td>Student 24</td>
<td>Aural / Kinaesthetic</td>
<td>Mix</td>
</tr>
</tbody>
</table>

The thirty participating students came from a 2nd year class, a group of mixed ability and a wide variety of learning. The course was Civic, Social and Political Education [4]. As the students had completed an introductory class in computing, they all began with at least basic computing literacy. The students were organized in four main groups: a mixed group with no consideration of the learning styles and a group with 3 subgroups of students with a preference for auditory, visual or kinaesthetic learning. Each group consisted of 15 students, with subgroups 5 students for each learning style.

The learning materials were presented online on easy to navigate pages (see Figure 1).
The students were given a password to access the pages matching their learning style (see Figure 2). They worked through exercises during their regular classes and did more exercises matching their learning styles in an additional afternoon session, replacing regular homework. The web pages contained different media and tasks for the different learning styles groups on the same topic. An example is given in the table below (see Table 2).

**Table 2: Learning Material for Different Learning Styles**

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Exercise</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>What is Carbon Footprint? Use links to find out. Calculate Carbon Footprint using calculator. What does this mean to you? Watch the video. Create a mind map showing what you could do differently in the future? Finish with carbon game.</td>
<td>Mind Map</td>
</tr>
<tr>
<td>Auditory</td>
<td>Listen to podcast. What is Carbon Footprint? How do we reduce it? Calculate Carbon Footprint. What does this mean to you? Discuss with partner what you and your family could do differently in the future? Record each others opinions. Finish with Carbon game.</td>
<td>Audacity</td>
</tr>
<tr>
<td>Read/Write</td>
<td>What is Carbon Footprint? Use links to find out. Summarise and post on blog. Calculate your Carbon Footprint. Watch the video. Write a list of things you could do differently to reduce you carbon footprint. Finish with Carbon game.</td>
<td>Blog</td>
</tr>
<tr>
<td>Kinaesthetic</td>
<td>What is Carbon Footprint? Use links to find out. Calculate Carbon Footprint. What does this mean to you? Watch video. Describe your typical day and how much carbon you emit. What will you do differently now? Finish with Carbon Game.</td>
<td>Google doc</td>
</tr>
</tbody>
</table>
This material was presented on simple html pages, one page for each group of learning styles learners and the group with mixed learning styles. Students in the mixed group always had a choice which material to use (see Figure 2).

![Picture](image)

**Lesson 1**

Here you will find a number of tasks to complete for lesson 1.

**Activity 1**

Watch the following videos:

- Video 1
- Video 2

Choose one of the following exercises to do:

1. Think for a minute now, define Global Warming by forming your own Mind Map.
2. Think for a minute now, write down a definition for Global Warming.
3. Think for a minute now, write down a definition for Global Warming.
4. Think for a minute now, write down a definition for Global Warming.

**Activity 2**

Look at the animation and then at the image.

Choose from one of the following exercises:

1. Draw a diagram of how Global Warming occurs and complete with labels. Look at your partner's work, add to your own if necessary.
2. Explain to your partner how you think global warming occurs. Take notes and write down your ideas. Help each other where needed.
3. Write down step by step how global warming occurs. Read partner's work and make changes where necessary.
4. Working with your partner, explain and draw a diagram explaining how global warming occurs.

If you have any questions regarding the project, please contact us:

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3. Results of the research project

The results of the different groups were compared among themselves as well as with a similar class, which did not use the additional online material. Learning results were measured with a pre-post assessment of the students' knowledge. The assessments were given to the students during their regular lessons and in the test format they are familiar with.

There were no significant changes between the pre and the post test (see Figure 3), meaning, that students with a strong result in the pre test also showed strong results in the post test. Only the kinesthetic group showed slightly lower marks than expected, but that was due to one exceptionally bad result.
These results are in support of research reporting learning styles might not help learners as much as expected [14, 15]. Feedback class sessions found that the majority of the students enjoyed the additional online experience and particularly the mix of the media. Attendance rates went up compared to other class attendance.

4. Feedback from the teacher

“Luckily, as part of the project was testing the students, I got an opportunity to bring my newly attained knowledge to the classroom straight away. Part of the project was to prepare lessons for students based on their particular learning styles and web 2.0 tools suitable for each particular learning style. A list of web tools I researched are: Adobe Acrobat Reader, podcasts, class blog, class website, FreeMind, Google Doc. I am now more than confident that I will be able adapt my lessons to include all learning styles. I am also more confident than I ever was when it comes to using IT in the classroom. I thought it was wonderful when I saw the fun and enjoyment the students experienced in these lessons. It was particularly encouraging to see how open the students were to new ways of learning and so I am determined to make it part of my lessons in the future.”

The teacher got exposed not only to a number of tools, but also to a different approach to find tools suitable for teaching and how to include new media in the teaching.

5. Conclusion

The project goal, to examine learning styles, was reached, although the impact of consideration of learning styles on the learning results could not be confirmed. However, the group of students was small and to come to valid conclusions, more data would be needed.

The overall goal of the STARs program was certainly reached. The teacher involved gained a lot of new insights and ideas, and most important, confidence to use new media tools and to help her colleagues to introduce these methods into their teaching.

6. Acknowledgements

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References


