

The Role of Online Resources in Developing Autonomous Learning Metacognitive Skills Among First-Year University Students of English: A Mixed Methods Study

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Abstract: *This mixed methods study examines the way online resources can be effective in developing the learning autonomy metacognitive skills of planning, monitoring, and self-evaluation among undergraduate students at the Faculty of Letters and Humanities Fes-Agdal, which is representative of the socio-cultural and higher education system of Morocco. The sample consisted of an experimental group and a control group. The experimental group consisted of 120 students who were exposed to three main online tools (Newsela.com, mrnussbaum.com, and rewordify.com), with virtual meetings and instruction provided through Facebook. The Facebook groups were kept secret, with only participants joining. The control group consisted of 120 students that benefited only from the university's regular reading courses. The experimental intervention period was followed by interviews with a sample of 25 students from both groups, providing a qualitative perspective. The overall results suggest that online resources have a positive effect on the development of metacognitive skills. Students tend to appreciate the inclusion of online resources in the classroom without devaluing the role of their EFL teacher – the students did not expect online resources to fully replace the role of their teachers.*

Keywords: *EFL online learning autonomy; learning autonomy; online resources; teaching and learning in higher education*

INTRODUCTION

“Learning Autonomy” implies the “ability to have and to hold the responsibility for all the decisions concerning all aspects of this learning” (Holec, 1981, p. 3). Learner autonomy in language learning has been consistently researched over recent decades. It has often been described as enabling students to be more active, engaged, motivated, responsible, and efficient in their learning process. As Benson (2014) explains, learning autonomy is a social and an individual construct. It complements the personal development of each student without neglecting the crucial role of the teacher within an autonomous process. Learning autonomy, as a learning process, is built upon a variety of forms depending on the learning environment, learner characteristics, and the significance of the role of the teacher. In general, autonomous learners are characterised as taking greater responsibility for their learning (Benson, 2014), and developing a “capacity for detachment, critical reflection, decision-making, and independent action” (Little, 1991, p. 4).

The development of learners' autonomous levels is not perceived as a direct process. It is still not clear which aspects of learning autonomy are enhanced through online resources (Sanprasert, 2010). Additionally, several factors might influence the

effectiveness of online resources in developing learners' learning autonomy. These factors include socio-cultural values, learning beliefs and expectations, the role of the teacher, and the content of learning (Borg & Alshumaimeri, 2019; Sanprasert, 2010).

The available literature (Kim, 2014; Ramirez, 2015; Szocs, 2017) examined the issues associated with learning autonomy in developing target languages. Additionally, the set of studies by Ariza and Sanchez, 2013; Reinders and White, 2016; Reinders, 2018 examined the effectiveness of online resources in developing elements associated with learning autonomy. Away from online resources, Vieira et. al., 2008 and Sert, 2006 examined how various teaching methods can contribute to the development of learning autonomy in the learning process of a target language..

Morocco has been inadequately studied with respect to research on learner autonomy, it appears that there is a scarcity of studies that focused on the same issue. The available literature suggested that there are two studies have examined learning autonomy in English as a Foreign Language (EFL) classrooms in the United Arab Emirates, but there is not a breadth of information on learning autonomy development through online resources in other Arab countries (Myrand, 2004). No report exists of a mixed method study that considers the perspective of both Moroccan students and teachers with respect to online resources in developing metacognitive skills amongst first-year EFL students. Hence, the aim of this study is to evaluate the importance of using online resources to enhance learning autonomy skills amongst Moroccan university EFL learners through the development of the skills of planning, monitoring, and self-evaluation through addressing the following research question:

1. *Are the participants able to develop the aspects of learning autonomy – planning, self-monitoring, and self-evaluation – through using online resources?*

The present study focuses on the development of learner autonomy from the internet-based perspective. It focuses mainly on the influence of online resources in improving EFL skills autonomously. This study is inspired by previous studies like Pellettieri (2000), Schwienhorst (2012), and Warschauer and Healy (1998). Most importantly, it underscores how autonomy is manifested, facilitated, or encouraged. To delimit the internet-based approach used in this study, the focus is on three main tools of online resources: reading comprehension exercises, reading development blogs, and reading tests. In order to test the efficiency of online resources in developing planning, self-monitoring, and self-evaluation, there is a need to test the null hypothesis (H0) and confirm the alternative hypothesis (H1):

1. *H0= Implementing online resources contributes to the development of students' learning autonomy metacognitive skills.*
2. *H1= Implementing online resources does not contribute to the development of students' learning autonomy metacognitive skills.*

METHODS

Describing the research design

The methodology used in this study is a mixed methods one, more specifically, Explanatory Sequential design. As Johnson and Onwuegbuzie (2004) suggest, the Sequential Explanatory Design is a research methodology that is based on collecting,

analysing, and mixing both qualitative and quantitative data in one study to generate breadth and depth of the issue being investigated. This type of research falls under the theory of “pragmatism” which is characterised by using direct research procedures to achieve a research goal or provide answers to specific research questions. This idea about the significance of mixed methods research is mentioned by Johnson et al. (2007), who state:

Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration (p.78).

The study takes a deductive approach, which means that it starts with the assumption that online resources tools would enable learners to become autonomous learners and efficiently develop EFL skills. Then, quasi-experimentation is based on a control of the independent variable that is based on implementing online resources; and then observing changes caused by the dependent variable which can be an increase or decrease of learning autonomy metacognitive skills.

Describing participants in the study

The participants are first-year major in English studies (cohort of 2020). The participants were split into two Facebook groups, one comprising the experimental group, the other the control group. The reason behind opting for Facebook is the flexibility that allows in administering experimental treatments in its group page layout. The two groups were added to Facebook to implement the treatments with the experimental group. Including participants in the Facebook groups would give a chance to work with them as well as implementing online resources tools to develop learning autonomy metacognitive skills.

120 first year students in the English department of the Dhar El Mehraz faculty Fes-Morocco students took part in the EG (experimental group). Their ages ranged from 18 to 26. Similarly, the CG (control group) had a total of 120 students, ranging from 18 to 25 years old. The same number of participants were chosen as way to enhance aspects of validity. Colman (2019) further explains this idea stating: “If one wants to keep to a minimum the possibility that alternative explanations can explain the results of one’s experiments, then ensuring that the experimental groups are of the same size is a useful first step to take” (p. 5).

Research instruments

For measuring autonomous learning behaviours that can be developed through the application of online resources, the study enlisted two retrospective research techniques: a questionnaire and an interview. Using more than one instrument is intended to enhance triangulation in this study, an approach employed to strengthen the study’s validity. Cohen et al. (2000) suggest that “triangulation can be a useful technique where a researcher is engaged in case study” (p. 115).

The items included in this questionnaire are adopted from the “Learner Autonomy Inventory” developed by Yang (2007). Yang’s (2007) tool is tested for validity with a Cronbach’s value of 0.87 ($\alpha = .87$).

This questionnaire was composed of a Likert-scale items. Hence, the participants had to choose from responses that ranged from (Strongly Disagree=1); (Disagree=2); (Neutral=3); (Agree=4); (Strongly Agree=5) to each of the items. Furthermore, the interview was used as a post-test instrument to generate qualitative data on the way online resources enhance students' learning autonomy metacognitive skills. The interview allowed generating more insights on the quantitative data as well as more clarifications on the participants' implementation of metacognitive strategies for autonomy; planning, self-monitoring, and self-evaluation while using online resources. Then, the interview was based on ten items (Appendix B). Interviews were conducted with a sample of 25 students from both the EG and the CG . The interviews were conducted at the end of the experiment/training period.

Setting of the study

The setting of the current study included both physical and online contexts. Participants in the study were students who enrolled in the department of English studies in the Faculty of Letters Dhar El-Mehraz at Sidi Mohamed Ben Abdellah University in Fes-Morocco. Their ages ranged from 18 and 26. In addition, taking the language proficiency level of participants in account, their English level ranged from upper-intermediate to advanced (based on the department requirements). Also, they were considered to be highly motivated to study English as they opted for it as a field of specialty for their BA degree. The reasoning behind opting for first year students was to make sure that they were highly motivated as well as ensuring that they would be available throughout the period of the study.

Description of the online tools

The first tool used was a website: "Newsela.com." It provides up-to-date news articles and has the facility to change the difficulty of the text based on the level of the learner. This tool provides five versions of the same material based on difficulty. Learners can use this website to work on their reading comprehension skills as it tests them on the texts they read.

The second website used by the experimental study referred to <http://mrnussbaum.com>. The selected website contains a variety of reading texts on various topics that readers can choose from. This website was chosen due to its various functions that allow learners to work autonomously in their target language reading skills, and this enable the researchers to assess the development of learning autonomy amongst the learners while relying on such websites.

The third website used was "rewordify.com". This website is capable of generating different versions with different difficulty levels of the same text.

The training/experiment procedure

The main experimental procedure was based on several meetings with both the EG and the CG throughout the period of the first semester. The steps taken throughout the period of the experiment can be described as follows:

Firstly, the researchers included the participants from both groups to the Facebook groups. Secondly, they conducted the experimental process using slight differences between the EG and the CG. For the EG, the Facebook group was implemented to grant access to the participants from the EG to the online tools. On the other hand, the Facebook

group for the CG was implemented to grant participants access to course related materials while excluding them from access to the online resources used for the EG.

The statistical analysis procedure for calculating results obtained from the autonomy test questionnaire

For descriptive and comparative purposes, *t* indicates whether the difference between the mean computed for the EG and that for the CG at a given item is significant. The significance level is set at $p < 0.05$, which means that the degree of chance or error tolerated is 5%.

It is essential to verify whether both groups are similar at the pre-test/post-test questionnaire stages. Verifying this similarity requires testing the null hypothesis (H_0) postulating that there is no significant difference between the EG and CG, pre-test and post-test. This type of hypothesis is two-tailed. This means that the direction of the null hypothesis is not specified, as there is no evidence indicating which group might score higher or lower as far as developing reading skills autonomously is concerned.

H_0 : MEG (Mean of Experimental Group) \approx MCG (Mean of Control Group) against another alternative hypothesis H_1 .

H_1 : $MEG \neq MCG$, where $MEG \geq MCG$, or $MEG \leq MCG$

MEG refers to the mean of the EG, Similarly, the MCG is the mean of the CG.

The analysis procedure for analysing the students' interviews

The analysis of the interview responses from the EG participants were analyzed using "thematic analysis. The process of analysing interviews was based on the six steps of thematic analysis as suggested by Bryman (2008), including familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up. Then, the interviews analysis process was done relying on the software Nvivo.

FINDINGS

Pre-test questionnaires

Table 1. *The development of self-monitoring using online resources*

	M EG	SD EG	M CG	SD CG	t	Mean difference
Make use of online resources to get the meaning of challenging vocabulary OREV	3.50	0.970	3.62	1.022	0.907	0.117
Online resources to work on assigned tasks ORST	2.11	1.165	2.01	0.983	-0.719	-0.100
Online resources to get more explanations ORME	2.05	0.849	1.89	0.797	-1.490	-0.158
Online resources to prepare for exams ORPE	1.78	0.724	1.71	0.760	-0.783	-0.075
Online resources to conduct research for courses ORSR	2.93	1.421	3.03	1.411	0.547	0.100

Table 2. *The development of planning using online resources*

	M EG	SD EG	M CG	SD CG	t	Mean difference
Online resources to plan reading activities ORPA	2.41	0.794	2.58	0.915	1.548	0.171
Online resources to decide on the time to work on reading skills ORDT	2.25	1.109	2.17	0.944	-0.552	-0.073
Online resources to control the pace of learning ORCP	2.59	0.855	2.54	1.047	-0.368	-0.045
Online resources to prepare for exams ORPE	1.78	0.724	1.71	0.760	-0.783	-0.075
Online resources to select more efficient activities OREA	2.31	0.879	2.44	0.899	1.119	0.128

Table 3. *The development of self-evaluation using online resources*

	M EG	SD EG	M CG	SD CG	t	Mean difference
Know progress through online self-evaluation tests POSE	1.94	1.048	2.18	1.135	1.655	0.233
Online resources to discover areas of weakness and work to overcome them ORDW	1.88	0.989	2.03	0.983	1.113	0.142
Online Resources to discover progress ORDP	2.06	1.140	2.13	1.152	0.507	0.075
Online resources to prepare for exams ORPE	1.78	0.724	1.71	0.760	-0.783	-0.075
Online Resources to test the skills developed after a session of language class ORRS	2.12	1.055	2.09	1.077	-0.182	-0.025

Developing self-monitoring using online resources

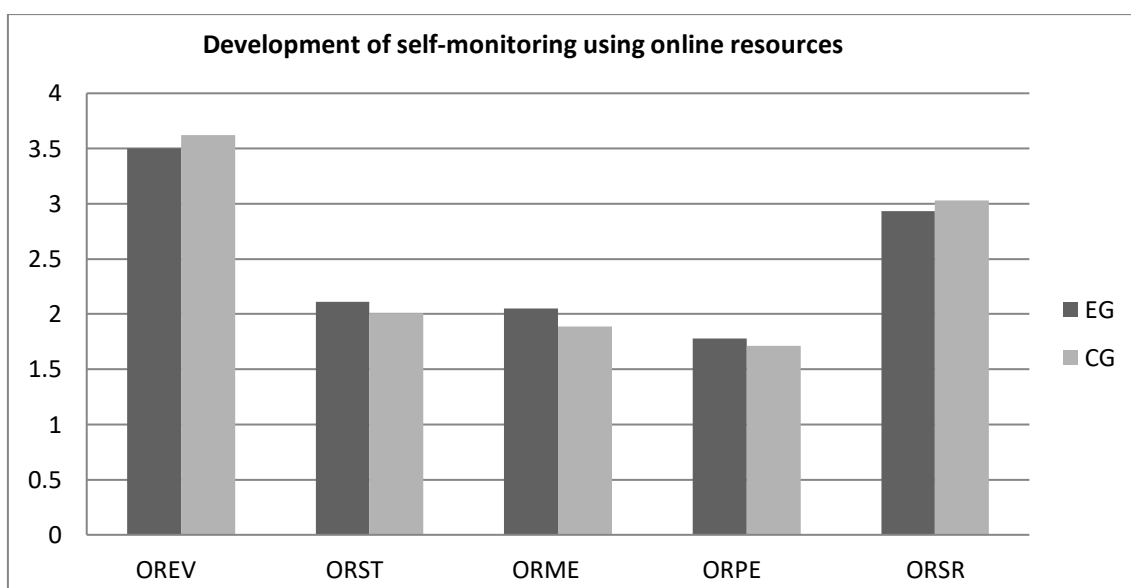


Figure 1. *The development of self-monitoring using online resources*

Development of planning using online resources

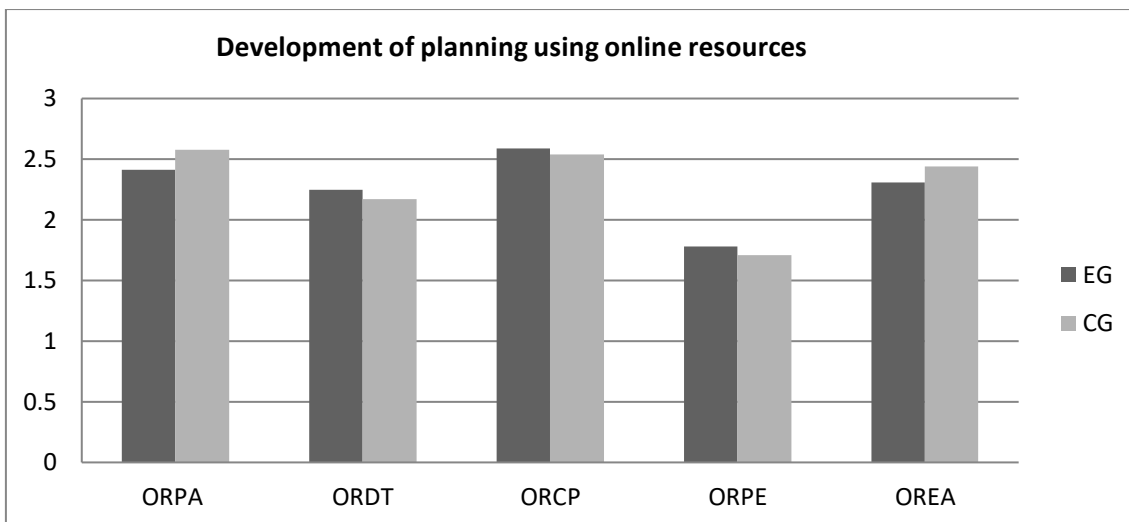


Figure 2. *The development of planning using online resources*

The development of self-evaluation using online resources

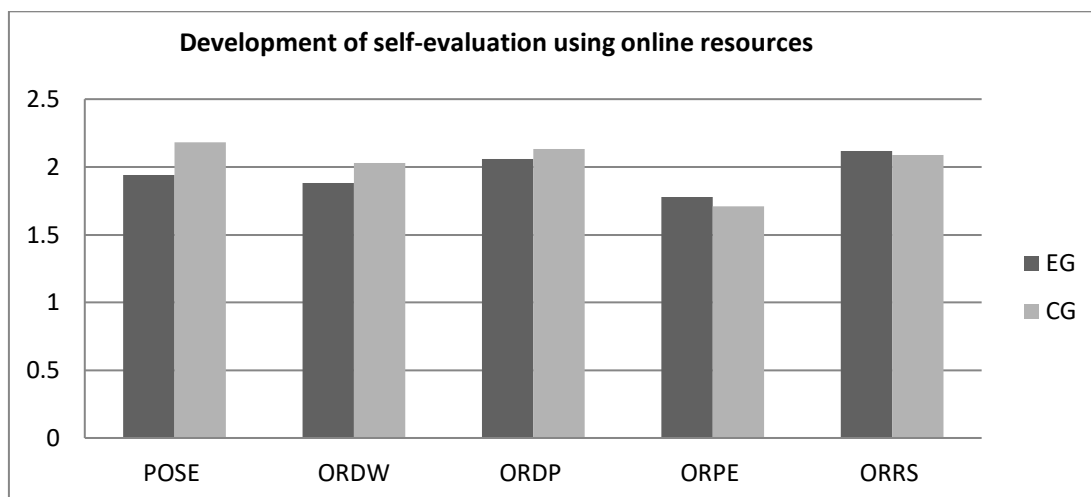


Figure 3. *The development of self-evaluation using online resources*

The similarity between the two groups may be explained by the fact that the respondents, at this stage of the pre-test, have not been subject to any instruction on developing learner autonomy online; both groups receive the same teaching based on the course curriculum. It is worth mentioning in that respect that all the teachers in the students’ programme collaborated in creating the content and exam for this course; regardless of which class the students were in, they received the same material and instruction.

Students' post-test questionnaires

Table 4. The development of self-monitoring relying on online resources

	M EG	SD EG	M CG	SD CG	t	Mean difference	Sig (2-tailed) p-value
Make use of online resources to get the meaning of challenging vocab OREV	4.36	0.591	3.72	1.014	-5.988	-0.642	0.038
Online resources to work on assigned tasks ORST	3.02	1.100	2.39	0.626	-5.410	-0.625	0.031
Online resources to get more explanations ORME	3.03	1.177	2.04	0.893	-7.291	-0.983	0.027
Online resources to prepare for exams ORPE	2.66	1.141	1.81	0.929	6.329	-0.850	0.030
Online resources to conduct studies research ORSR	3.83	0.694	3.21	0.672	-6.991	-0.617	0.043

Table 5. The development of planning relying on online resources

	M EG	SD EG	M CG	SD CG	t	Mean difference	Sig (2-tailed) p-value
Online resources to plan the reading activities ORPA	2.96	0.869	2.625	0.860	-3.060	-0.341	0.047
Online resources to decide on the time to work on reading skills ORDT	2.73	1.164	2.22	0.883	-3.809	-0.508	0.042
Online resources to control the pace of learning ORCP	3.13	1.315	2.65	1.164	-3.014	-0.483	0.044
Online resources to select more efficient activities OREA	3.10	1.339	2.62	1.130	-3.020	-0.483	0.041
Online resources to plan the reading activities ORPA	2.96	0.869	2.625	0.860	-3.060	-0.341	0.047

Table 6. The development of self-evaluation relying on online resources

	M EG	SD EG	M CG	SD CG	t	Mean difference	Sig (2-tailed) p-value
Discover progress through online self-evaluation tests POSE	2.98	0.961	2.28	0.881	-5.881	-0.700	0.039
Online resources to discover areas of weakness and overcome them ORDW	3.23	1.111	2.36	0.942	-6.517	-0.867	0.029
Online resources to discover progress ORDP	2.97	1.256	2.09	0.996	-5.979	-0.875	0.032

Online resources to test the skills developed recently ORRS	3.05	1.136	2.15	0.984	-6.557	-0.900	0.024
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Developing self-monitoring using online resources

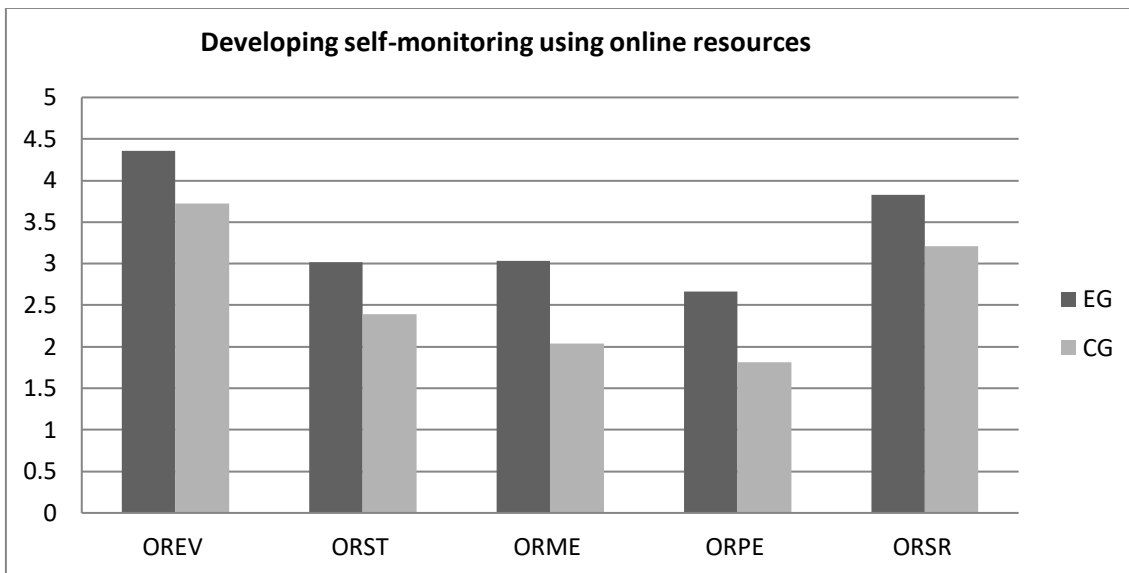


Figure 4. *The development of self-evaluation using online resources*

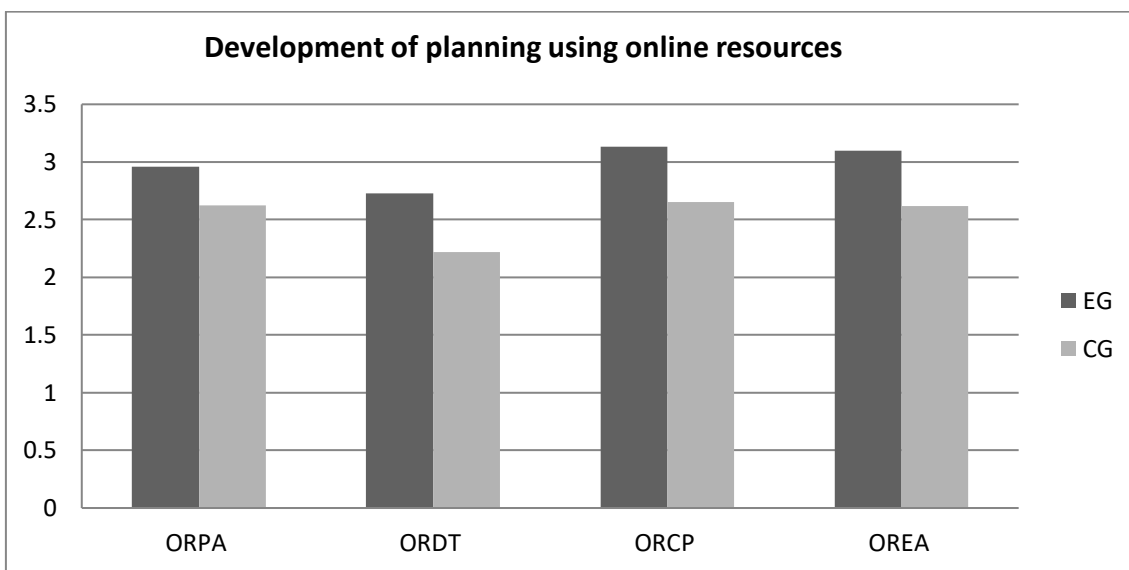


Figure 5. *The development of planning using online resources*

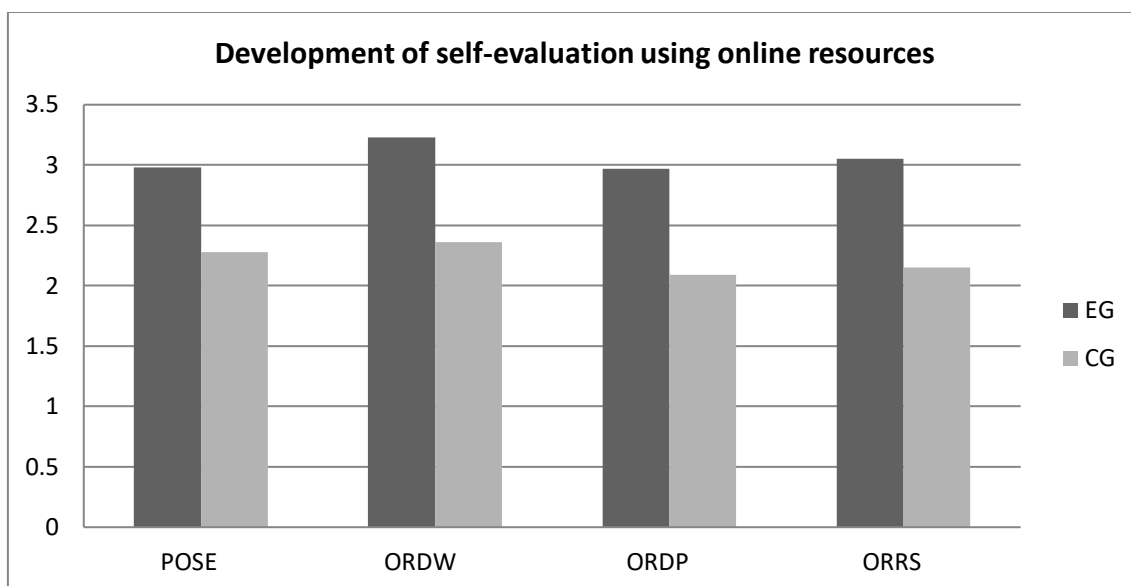


Figure 6. The development of self-evaluation using online resources

On the whole, the responses collected through the post-test questionnaire reveal that the EG outperforms the CG in developing aspects related to learning autonomy, including the level of relying on the teacher, planning, self-monitoring, and self-evaluation. The significant difference between the EG and the CG in the post-test, but not in the pre-test, may be explained by the effect of the treatment/training.

Students’ post-test interviews

Students’ perceptions of using online resources to develop planning skills

Item number 5 aims to understand the way online resources enable the participants to develop planning strategies while working on their reading skills. This item investigates how the EG makes use of online resources to develop planning strategies. The EG participants were asked if they believe that online resources permit them to plan aspects of their learning process. According to the respondents from the EG, online resources can develop the participants’ planning skills, which relates to learning autonomy. The respondents suggest that online resources enable them to take learning actions, including planning to work on the activities they want to work on, deciding on the reading activities that they are most interested in, and setting clear goals for their learning. EG participants supported this idea: *“Yes, for example you may make a plan: every day you select a text to read or an article, then, after reading every text, you will finish by learning new skills and new vocabulary.”* [SIC] Another participant suggested: *“It enables me to be active during the process. I learn and I react. So, that my learning strategy becomes more organised in terms of time.”* [SIC].

EG participants brought up the role of their teacher in enabling them to plan their learning through online resources. The respondents suggest that despite the position that online resources can have in developing planning skills, the teacher still has an effective role and takes part in helping students to plan their learning. For example, one of the participants states: *“When it comes to planning, I think that is when you need to rely on your teacher more, and see what s/he focuses on, so you can make a plan and then use*

some online resources to help you.” [SIC] As the previous quote suggests, the role of the teacher cannot be neglected in the planning process, as he/she complements the way planning is developed through online resources.

Students’ perceptions of using online resources to develop self-monitoring skills

The EG respondents seem to have mixed opinions about how far they can rely on online resources to build monitoring skills. Item 8 examines the extent to which the participants make use of online resources to gauge their reading skill advancement. The participants’ answers suggest that online resources enable them to monitor the process of developing their reading skills. One interviewee states: *“Using online resources while developing reading skills enables me to develop in terms of correcting my mistakes and being aware of the points I need to work on.”* [SIC] Another participant maintains: *“Online resources give me the chance to select each time a different level of difficulty which can actually inform me about how much progress I am making.”* [SIC] Another participant suggests: *“Online resources they provide tasks to see which level the reader currently has, and the progress made.”* [SIC] In the light of these responses, it appears that some of the participants hold positive attitudes in relation to the role of online resources in developing students’ self-monitoring skills.

Overall, the gathered responses demonstrate that the participants have positive feelings about using online resources to monitor their learning while developing their reading skills. The answers show that the participants from the EG rely on online resources to set the pace of their learning, use online resources to understand their current level, and recognise the progress they are making while developing their reading skills. These skills demonstrate aspects of learning autonomy. The responses show that some of the participants still believe that simultaneously developing self-monitoring and reading skills should be supported by the teacher.

Students’ perceptions of online resources to develop self-evaluation skills

Item 12 asks the EG participants whether online reading tests enable them to self-evaluate the progress of their reading skills. Respondents claim that online resources enable them to rely on themselves to test their reading skills. One of the respondents suggests: *“Online resources enable me to rely on myself to test the progress I make while developing reading skills. I do this by taking level tests before working on different tasks and after finishing to see the difference.”* [SIC]

The overall responses demonstrate that receiving feedback on errors enables learners to be aware of mistakes and patterns, and improve upon them. By providing these features, online resources allow participants to act more autonomously through their having the ability to get targeted feedback on their work and progress, and at the same time, to discover the mistakes they make and work on them. Through evaluating and getting feedback on their progress, learners develop learning autonomy as they become capable of self-evaluating their development.

DISCUSSION

Significance of online resources in developing planning

Under item ORDT, which is dedicated to investigating the significance of using online resources to decide on the time devoted to work on reading skills, the EG scored

($M=2.73$), while the CG scored ($M=2.22$). The mean difference between the two groups is significant ($t=-3.809$). Additionally, results generated from item ORCP, which examines the extent to which the participants rely on online resources to control the pace of their learning, produce an EG mean ($M=3.13$) significantly different ($t=-3.014$) from the mean scored by the CG ($M=2.65$). Finally, the results gathered from item OREA, which examines the extent to which participants use online resources to select efficient activities for the development of their reading skills, demonstrate that the mean obtained for the EG ($M=3.1$) is higher than that for the CG ($M=2.62$), and the difference between the two means is statistically significant ($t= -3.020$).

The results reporting superiority of the EG to the CG in the post-test but not in the pre-test may be explained by the variable of training that helped the EG but not the CG, who benefited only from general discussions and classroom direct instruction. The online resources that the participants benefited from – “newsela.com,” for example – provide learners with the chance to plan their learning. For example, “newsela.com” allows students to select the reading activities on which they want to focus. Similarly, mnrussbaum.com allows students to plan their learning using its features, including selecting topics, time, and difficulty level. This provides students with ways to plan their learning. The results are also supported by the fact that students in the EG benefited from the treatment over two academic years. The period of this experiment might have had significant effects on the way participants from the treatment group benefited from the training. This last idea is confirmed by Rosenbaum (2002), who mentioned the importance of time as a significant factor within different types of experimental research. The time that students spent making use of online resources enabled them to become familiar with the selected online resources and to start relying on them as an essential element of their learning processes. Further, the interview results suggest that students in the experimental group prefer to use online resources for planning. Such views are explained by the effect that the training has on the participants.

The interviews gathered responses that show how exposure to online resources can enable students to develop planning skills such as setting goals for their learning. The interactive and informative nature of the selected websites like “Newsela.com,” help students set clear learning goals and work towards achieving them. These findings validate earlier research that shows how interactive online resources can have a significant effect in developing students’ meta-cognitive skills, including planning (Anderson, 2008; Cotterall & Murray, 2009; Crabbe et al., 2013; Mynard, 2017). The interview responses further demonstrate that students in the experimental group get the chance to develop and implement planning skills, as they choose to read about topics that interest them. All the websites used for this study (newsela.com, mnrussbaum.com, and rewordify.com) provide students with a wide variety of topics. This option allows students to plan their learning more effectively because it provides them with the flexibility to decide on topics that interest them (Bernard et al., 2004; Marzben, 2011).

Significance of online resources in developing self-monitoring

The study’s hypothesis is based on the assumption that online resources can play a significant role in developing self-monitoring. This idea is supported by previous studies (Chang, 2007; Kauffman et al., 2011). In this research, findings on the effectiveness of online resources in developing self-monitoring skills are generated from

the pre-test/post-test questionnaires, interviews with experimental group participants, and interviews with teachers.

The results of item ORME further illustrate this. These show a mean for the EG of ($M=3.03$). Yet, the mean attained for the CG is ($M=2.04$). The difference between the two means is significantly different ($t= -7.291$). Additionally, results obtained for item ORPE, which examines the participants' level of using online resources to prepare for exams, show that the mean computed for the EG is ($M=2.66$) and that for the CG is ($M=1.81$). The difference between the two groups is significantly different ($t= 6.329$).

Findings from the interviews support those obtained through the questionnaire, elaborating these results to a greater extent. The interview responses show that the participants from the EG rely on online resources to set the pace of their learning. The participants view as an essential advantage of online resources the flexibility they provide in serving the students' different learning needs. They view online resources as providing a large variety of content of different levels that can serve students' current abilities. This flexibility helps students set the pace of their learning according to their level. Different students stress the idea that teachers still play a significant role in helping them monitor their learning process. The responses gathered from the teachers' questionnaire further support and explain this idea. The overall findings from this section confirm previous findings by Chang (2007) and Kauffman et al. (2011).

Significance of online resources in developing self-evaluation

The results demonstrate that students from the EG are using online resources to self-evaluate the development of their reading skills, including the recently developed ones. The difference between the means from the EG in contrast to the CG can be explained by the training that benefited the EG group. These results back up the research introduced by Castle and McGuire (2010), Sojisirikul and Intratat (2008), and Oliver (2000) which suggests that online resources can contribute to the development of self-evaluation skills. Additionally, the results acquired from the EG can be explained by several factors. First, online resources provide students with access to various possibilities of self-evaluation tools. Second, the results can be explained by the desire and interest of students in using online resources as a tool through which they can be informed instantly about their progress. Another factor can be linked to students' interest in coming across new ways of evaluation, in addition to the ones they are exposed to in the classroom.

The interview responses support the questionnaire results and give a thorough understanding of how online resources contribute to the development of self-evaluation skills. Items 10, 11, and 12 yield more insights concerning the development of self-evaluation. The interview responses demonstrate that students from the EG are aware of the importance and significance of online resources in supporting the evaluation of their reading skills. The self-evaluation skills are enhanced by providing students with the opportunity to be aware of the progress they are making, at the same time exposing them to good language models. This idea is confirmed in the work of Goodman and Stuhlmüller (2013), which shows the significance of exposing students to good models in developing their language skills.

CONCLUSION

In conclusion, the results obtained from comparing pre-test responses to post-test responses show that the experimental intervention proved effective in developing students' metacognitive skills of planning, monitoring, and self-evaluation. The results obtained from the pre-test questionnaire show that the training is effective in improving students' planning skills. The same results demonstrate that exposing students to online resources enabled them to monitor their learning through increased flexibility and selection options available. Additionally, comparison of the results obtained from the control group (CG) and the experimental group (EG) in the pre-test period demonstrate that students from the EG use online resources to self-evaluate the development of their reading skills, including the recently developed ones.

The interview provides more insight into the ways students perceive the role of the teacher in learning contexts. Most students do not believe that online resources can completely replace the role of the teacher. The responses show that students view the teacher's important role in this context as helping students choose useful websites to consult in accordance with the course content, as well as providing needed feedback throughout.

Pedagogical implications

New college students are used to relying on the teacher in almost all tasks and processes related to their learning. Teachers are viewed as being in charge of different learning activities including, but not limited to, providing information, guiding and facilitating activities, and providing evaluation and feedback. As an outcome, when students reach higher education levels, they maintain the same beliefs, which affect their overall learning process. It is essential to guide students towards having a more active role in their learning process by introducing them to different ways of acting autonomously, such as relying on online resources and reframing the role of the teacher in higher education.

Interacting using online resources enables students to find better learning opportunities, especially when sharing their own learning experiences and learning from those of their peers (Haythornthwaite, 2006). It is essential to provide the necessary guidelines for using online resources for interaction purposes to students prior to exposure. The level of teachers' comments and feedback in the online environment is of prime importance. It can either play a significant role in enhancing students' interactions, or it can hinder students' effective use of such contexts. As a result, there is a need for teachers to effectively monitor students' use of online resources while remaining aware of their individual differences. The same recommendation can be made for policy makers to provide more opportunities for instruction using online resources.

Limitations of the study

Although the current study is carefully designed, some limitations were unavoidable, as with all research. First, the survey items and interview questions employed in the study are substantially developed and adopted from studies in primarily Western contexts, due to the fact there is a lack of studies that focus on learning autonomy and ICT within the Moroccan educational system. Taking into account this context, which

is often unlike the Moroccan educational context, the study performed a direct procedure to maximise the level of validity and reliability. The process of the instrument development, treatment design, and treatment implementation places significant considerations on the socio-cultural characteristics of the Moroccan university students.

Finally, the focus of the study resulted in limited consideration of other factors that might have a direct or indirect effect on the examined variables. These factors include learning preferences, computer access, the role of parents, teaching styles, the content of the reading courses, and direct instruction about learner autonomy that the participants might have received prior to the study.

DISCLOSURE STATEMENT

The author declares no conflict of interest associated with this research.

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APPENDIXES

Appendix A: Autonomy Inventory (Yang, 2007)

A. Evaluation of English teacher’s aims and requirements

	Strongly Disagree					Strongly Agree
1. I clearly understand the teacher’s aims.	1	2	3	4	5	
2. It is easy for me to make the teacher’s goals into my own goals.	1	2	3	4	5	
3. I clearly understand the importance of making the teacher’s goals my own, as well as studying hard to achieve those goals.	1	2	3	4	5	
4. I clearly understand the teacher’s intention during in class learning activities.	1	2	3	4	5	
5. In class, it is easy for me to keep up with the teacher’s pace.	1	2	3	4	5	

B. Evaluation of establishing studying goals and plans.

	Strongly Disagree					Strongly Agree
1. Outside of assignments given by the teacher, I have a clear plan for studying on my own.	1	2	3	4	5	
2. When studying English, I establish practical goals for myself based on my true English level.	1	2	3	4	5	
3. I am good at adjusting my studying plans based on my progress.	1	2	3	4	5	
4. I am good at creating a practical studying schedule for myself.	1	2	3	4	5	
5. I am good at establishing study goals based on the requirements outlined by the class.	1	2	3	4	5	

C. Evaluation of the learning strategy’s implementation.

	Strongly Disagree					Strongly Agree
1. I have a complete understanding of the learning strategy.	1	2	3	4	5	
2. I can consciously employ effective strategies to improve my listening comprehension.	1	2	3	4	5	
3. I can consciously employ effective strategies to improve my spoken English.	1	2	3	4	5	
4. I can consciously employ effective strategies to improve my reading comprehension.	1	2	3	4	5	
5. I can consciously employ effective strategies to improve my written English.	1	2	3	4	5	

D. Evaluation of ability to monitor the usage of learning strategies.

	Strongly Disagree				Strongly Agree
1. I can consciously monitor the usage of listening strategies during practice.	1	2	3	4	5
2. I can consciously monitor the usage of speaking strategies during practice.	1	2	3	4	5
3. I can consciously monitor the usage of reading strategies during practice.	1	2	3	4	5
4. I can consciously monitor the usage of writing strategies during practice.	1	2	3	4	5
5. I am able to find and solve problems in my method of studying.	1	2	3	4	5
6. I am conscious of whether or not my method of studying is practical.	1	2	3	4	5
7. If I realize that my method of study is impractical, I quickly find a more suitable one.	1	2	3	4	5

E. Evaluation of English learning process.

	Strongly Disagree				Strongly Agree
1. Outside of class, I take advantage of various opportunities to practice my English. (e.g. Using English to talk to classmates about daily life; participating in English speaking activities, etc.)	1	2	3	4	5
2. I make an effort to overcome emotional issues that may hinder my English studies, such as shyness, anxiety, and inhibition.	1	2	3	4	5
3. I use available learning resources such as the library, internet, dictionaries, etc. to improve my English.	1	2	3	4	5
4. It is easy for me to put newly learned English into practice.	1	2	3	4	5
5. I often study together with other people, such as practicing with a language partner, or practicing and reviewing materials with classmates.	1	2	3	4	5
6. While practicing English, I am able to realize my own mistakes and correct them.	1	2	3	4	5
7. When I discover my mistakes, I understand the underlying reason for making them (e.g. interference from my mother tongue, or a lack of familiarity with grammar rules, etc.)	1	2	3	4	5

Appendix B: *Students' post-test interview protocol*

Thank you so much for taking part in this interview. The aim of this interview is to test to what extent English department university students show signs of autonomous learning while being exposed to online resources. Please read/listen carefully to the following questions and provide answers that explain your own case. Please remember that there is no right or wrong answer to the following questions. Your participation in this research is highly appreciated. Thank you very much!

1. Do you think that learning English is limited to the classroom and the material provided by the teacher?
2. Do you use online resources to develop your English skills?
3. Do you use online resources to develop your reading skills? If yes, can you explain more?
4. Do websites like newsela.com, readtheory.org, and mrnussbaum.com help you develop reading skills on your own outside the classroom? If yes, can you explain more?
5. Including the websites mentioned above, do you believe that online resources enable you to plan your learning process? If yes, can you explain more?
6. Do you believe that online resources enable you to proceed clearly and directly while developing your reading skills? If yes, can you explain more?
7. Do you believe that you can rely solely on online resources to develop your reading skills without the help of your teacher? If yes, can you explain more?
8. To what extent do you believe that online resources inform you about your advancement in developing reading skills?
9. Do you believe that online resources can provide the same feedback as your teacher? If yes, can you explain more?
10. How do you use online resources to test the development of your reading skill?
11. Do you believe that the reading tests available online can reflect your current level? If yes, can you explain more?
12. How do online reading tests enable you to self-evaluate the development of your reading skills?
13. What are the overall ADVANTAGES of online resources in developing language skills autonomously?
14. What are the overall DISADVANTAGES of online resources in developing language skills autonomously?
15. Do you have any other comments you would like to express in relation to the issue being investigated?

Appendix C: List of Abbreviations

Name of items	Abbreviation
Make use of online resources to get the meaning of challenging vocabulary	OREV
Online resources to work on assigned tasks	ORST
Online resources to get more explanations	ORME
Online resources to prepare for exams	ORPE
Online resources to conduct research for courses	ORSR
Online resources to plan reading activities	ORPA
Online resources to decide on the time to work on reading skills	ORDT
Online resources to control the pace of learning	ORCP
Online resources to prepare for exams	ORPE
Online resources to select more efficient activities	OREA
Know progress through online self-evaluation tests	POSE
Online resources discover areas of weakness and work to overcome them	ORDW
Online Resources to discover progress	ORDP
Online resources to prepare for exams	ORPE
Online Resources to test the skills developed after a session of language class	ORRS