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The impact of technology on VARK learning styles: a Case study of Advanced Italian Language Students at the University for Foreigners of Siena

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Abstract:
Learning styles have drawn favourable attention from researchers of all stripes during the last five decades, in which much ink has been spilled on the matter in wide-ranging teaching fields **(Reid 1987/1995; Dunn & Dunn 1978; Kolb 1984; Fleming 2001)**. **VARK** is one of the most renowned models developed by **Fleming (1987)** and was designed to highlight four major learning styles: Visual, Auditory, Reading/Writing and Kinesthetic. In order to successfully acquire a foreign language, a teacher should be well-knowledgeable of the learning styles governing their class in order to provide a smooth learning experience. This knowledge is a base ground for designing feasible methods and techniques that rhyme with learners' needs and trigger their learning habits. Therefore, with the advance of technology, teachers tend to employ sophisticated teaching methods that serve as facilitators in tackling both learning needs and objectives. Thus, the present study aims at investigating the impact of technology implied inside an Italian language teaching classroom at the University for foreigners in Siena on the motivation and engagement of learners with different learning styles identified by the **VARK** model developed by Neil Fleming in 1987.

Keywords: *Italian language, Learning styles, Motivation, Teaching, Technology, VARK model.*

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I. INTRODUCTION

Individual varieties nowadays have stood the test of time in various domains and proved challenging in covering its nature and manifold aspects. With regard to learning as a complementary process of teaching, variety became an intriguing part in any classroom as they conventionally embrace learners from various linguistic, cultural, social, ethnic and academic backgrounds. Thus, learners display distinct learning habits and styles that make them stand as heterogeneous in a classroom setting where each should be addressed separately. The teacher is therefore expected to vary the teaching methods and techniques in order to explore as well as to answer the needs of his classroom's varied nature and students' learning styles. With the advance of technology, advanced technological equipment remained abreast of the teaching field and an indispensable part of any school environment. It displayed wide-reaching implications inside classrooms as a way to ameliorate teaching practices and facilitate the learning process for learners to be fully engaged in the process.

If employed to a turn, technology would greatly assist in brushing up learners' individual styles strategies for methods and techniques to be designed accordingly. Hence, the present study is aimed at investigating the impact of integrated technology on the motivation and engagement of learners with different learning styles existing inside the advanced-level Italian language classroom. It is an attempt to dive into the impact of technology viz. the use of technological teaching materials on the different learning styles behavior and mode of interacting with the teacher and the planned lesson; we therefore hypothesize that **the integration of technology in the classroom boosts motivation and hones the learning experience for all learning styles by providing engaging and stimulating content** or **that technology inside classrooms hinders interaction for non-visual learning styles and thereby affects motivation and intercepts learners' understanding and retention of information.**

The present research aims at responding the following questions:

1. What teaching technologies are frequently used inside the classroom?
2. Does technology have an impact on non-visual learners' motivation inside class?
3. Do VARK learners find technology inside the classroom engaging?

1. Review of literature

1.1 Language

Learning is a process that involves having experiences intended for a permanent change in a learner, it was defined by **Anderson (1995)** as *"the process by which relatively permanent changes occur in behavioral potential as a result of experience"* In this definition, it is indubitably elicited that behavioural psychology, as a prominent component in the teaching field, receives learning as a progressive process, in which the different parts of the human body are potent in the process. The latter is initiated through the perception of the external stimuli using the engaged parts of the body each according to the learning habits. In a similar vein, Hamalik (1983) introduced learning as the process of undergoing advancement or a transformation in an individual's behaviour through incorporating both practice and experience. He further highlighted that this transformation is conspicuous in gaining novel ideas and insights and in altering attitudes, skills, and emotions and so on.

1.2 Second Language Acquisition

Language is our way to talk and to express ideas, feelings and emotions and share it with others. Second language acquisition can be defined as the process of learning languages other than the native language, such as the case with the acquisition of English as a second language in addition to the Arabic mother tongue for Algerian students. So any process of acquiring another language or learning it by a child or an adult is called second language acquisition (SLA).

1.3 Learning styles

Learning styles are various strategies individuals unintentionally put into use to acquire knowledge and information. The main concept of learning styles revolves around people learning in different ways and therefore teaching methods should be adjusted to cater for individual learning preferences. Leaning styles can also be defined as the way through which the brain has the ability to process information and thereby attain learning for individuals. Those ways are various and they differ from one individual to another. Later years, researchers have armed the teaching field with research resources and experiments that are devoted towards understanding and analyzing the learning styles. Therefore, linguists have come to infer that there are about 40 learning styles among which some were developed into theories and models to assist in understanding the learning nature of most learners and respond to it accordingly. By virtue of the theoretical conclusions that were drawn in the field, designing syllabi and lesson plans became less demanding for teachers who are nowadays well-equipped with all needed strategies to analyze learners' needs. **Keefe (1979 as cited from Brown, 1994)** defined a learning style as the *"cognitive, affective, and psychological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment."* He emphasized the fact that the learning style is an all-inclusive concept that determines, within its nature, the way a learner proceeds in acquiring the knowledge he extracts from his surroundings. It is therefore a set of processes both mental and behavioural that are all together decisive in identifying the most suitable strategies towards learning.

1.4 VARK learning styles

The **VARK** model is the most prominent and far-flung model that was introduced in modern teaching in order to identify an individual's learning style and which was developed by **Neil Fleming** in **1987**. In his model, Neil highlighted **Four (04)** main learning styles: Visual, Auditory, Reading/Writing and Kinesthetic learning style. The first which is the visual style refers to individuals who perceive information preferably using only sight. This can be attained by observing charts, maps, schemes and slides. Second, Auditory learners can exceptionally store information for a long period of time when they are exposed to audios, videos and discussion with others. Third, another learning style which is the Reading/writing style introduces individuals who can effectively learn when reading texts, writing new information, repeating out loud the received information in order to fix it in mind. The last type identified by the **VARK** model is the kinesthetic type which is based on live experiences and touching as strategies to better grasp and store new information.

Within the VARK model introduced by Fleming, a **VARK** questionnaire was outlined and designed **(2019) (Version 8.01)** that contains **16** questions to answer spread over two pages in the form of multiple choice questions (MCQ). The addressed participant can tick more than one option out of a total of four (4) as an answer for each question. At the end of the questions, learners are provided with a scoring chart which serves to identify the style category the participant can be assorted in. This can be fulfilled by calculating the sum of the answers which are bulleted as letters to be circled **(V, A, R, K),** so that the prevailing sum of the letters represents their learning style according to the **VARK** questionnaire results.

1.4.1. Visual

A visual learner, also known as a spatial learner, obtains their information more effectively through means of observation. Visual learners will often choose words like 'plan', 'view', 'see', and 'imagine' in their vocabulary, as well as utilize their imagination to mentally convert text and speech into their own visual representations **(Fleming, 2013).** People who adopt a visual learning style would prefer to view information presented using imagery rather than words. This includes employing items such as graphics, charts, maps and diagrams as learning tools to understand concepts **(Fleming, 2012).** Visual learners also find it easier to retain written information when patterns, color, shapes and whitespace are used to enhance their ability to record new information **(Fleming, 2013)**. Hence, teachers can resort to assignments and plays as technics to work with this type of learning styles and to boost their creativity.

1.4.2. Auditory

An Auditory learner acquires best through listening and speaking **(kostelnick, 2004)**. They are typically very good in what is called active listening. According to the **VARK** leaning styles online platform, this type of learners can distinctively process information from lectures, discussions with other learners, audio devices such as radio besides using mobile phones. This type of learners are typically good story-tellers and skilled at solving problems. They are successfully imposed in society through communicating with other where a greater number of this style has social personalities. Auditory learners are able to collect and retain information best through verbal instructions. This could be through variegated means such as storytelling, songs, and lectures or through face-to-face talking to others. In order for teachers to enhance their skills, it is possible to incorporate multimedia devices using sounds, music or speech, such as audiotapes, computer, musical instruments and so on.

1.4.3. Reading/Writing

The letter R in the **VARK** learning style model refers to the word Read (or write). Learners of this type of learning style have a visual verbal style in processing information, they can effectively store information by reading textbook **(Klement, 2014).** These students resort to the use of written words that are considered as the most dependable way to receive and collect information. They are considered as critical and analytical learners in their thinking, good thinkers and extremely clever when it comes to questions about the mechanism of a process. This generally leads to Read/Write learners distancing themselves from others, often believing that the words and lists they are exposed to are more sufficient in grasping the whole concept. Thanks to their innate ability to rapidly process, retain and transmit information through verbal communication, verbal learners may be well-suited for jobs that deal with social interactions such as teaching, nursing, law, journalists or translators **(Fleming and Bonwell, 2013).**

1.4.4. Kinesthetic

Laskey (1997) defines a kinesthetic learner as being tactile in learning, touching and manipulating objects associated with learning. They represent the letter **K** in **VARK** learning style model developed by **Fleming** and **Bonwell**. As it is all about touch and feeling, kinesthetic learners tend to examine, feel and manipulate objects. This type of learners are received as very poor listeners so they rather stand closer when listening as they possess the quality of losing attention easily when it comes to long speeches and discourses. They learn by doing where verbal interaction would not be sufficient in the process of learning. Learners of this type have a tendency to be mobile and moving by resorting to rely on their sense of touch, gestures and their body language in order to engage in the task beforehand. Kinesthetic learners may be pulled towards careers that involve dancing, sports, artists, police services and military. Practically, they are mostly favoured for jobs and occupations that require movement.

2. Teaching and Technology

Teaching is perceived as a hard-to-accomplish concept through which a teacher undergoes a series of challenges which require considerable efforts during both pre and post lesson presentation. Nowadays, technology plays an utmost part in daily life as it gradually became a regular practice in all life domains. Integrating new technologies in the teaching-learning process became part and parcel day to day as traditional methods and techniques are no longer effective in positively contributing to the students' engagement in educational attainment.

Alfonsina Coronella - Renzo Izz (2015) (PPT) pinpoints that the use of digital technologies inside the classroom and their role in teaching highlights the need for a change in the way of schooling, teaching and learning, therefore, newfangled notions and better practices aimed at collaboration and sensible use of novel technologies are mostly needed in order to improve learning outcomes. The set of technologies aimed for teaching consists of hardware or software tools that play a catalyst role as facilitators in indulging learners in a constant motivational learning environment. In such a didactic model, it is obvious that the teacher's role changes profoundly; the teacher ceases to be the main expositor of information but rather a "facilitator", adviser, organizer and an instructor.

2.1 Tablet and Personal Computer(PC)

In general, technology has a tremendous impact on the process and the quality of education all over the world. It is an undeniable fact that technology with all its tools simplifies the ways information is delivered by teachers in the most amusable form as well as motivates learners to achieve more. **Computers,** or commonly known as a laptop or **PC (personal computer)** along with **tablets,** are the main equipment for this objective. First, by virtue of its genius formula which is compared to a human being's brain, it is effortless to make use of it in any setting sparing both time and effort. It therefore became in vogue in various fields that it succeeded in occupying each and every work or educational institutions as an all-inclusive programmed device with myriad of advantages to display. When it comes to learning, teachers bring into play computers to facilitate their mission as deliverers of information and displayer of ambiguous and intricate concepts to be elucidated by those devices. Thus, all educational institutions tend to accommodate any classroom with portable devices for teachers to use in looking up information or planning lessons in a Word, PowerPoint, or PDF format. It is accepted that computers have the potential to enhance teaching and learning and provide students with a learning experience that other strategies cannot provide **(Wellington, 2005)**. Although it proved useful in easing the process of learning and teaching, various drawbacks manifested in later years because of the unmanageable manner it was handled with. For instance, technology may ever so often be a hindrance and time and effort consuming in developing countries where the easy access to a constant internet connection cannot be achievable most of the time. Alternatively, teachers refer to the traditional methods with no access to modern technology and feel satisfied with just using the portable device as a displayer of some needed information for lesson presentation.

2.2. Data Projectors

Data projectors are remarkably used by teachers at higher-education institution to provide a teaching environment with effective visual experience to students. **Greg Mickelborough** mentioned that laser technology is precisely what a teacher needs to set up a feasible atmosphere for lesson presentation in class. He added that those devices have proved reliable and quite simple to use, in which you can directly connect a laptop or use a wireless connection and the projection will be immediately available on the screen. According to **Christina Whitaker (2018),** the use of projectors in classrooms appoints multiple advantages for learners in that it assists in effortlessly taking notes and in a more convenient way than listening to the teacher's verbal explanation. Altogether, learners became more attentive about and focused on the information introduced both visually by the projector and verbally by the teacher which demonstrated better learning outcomes. As for teachers, projectors paved the way for creativity and shunned away monotony when it comes to lesson presentation using a variety of audio-visual materials with no time or effort demanded.

2.3. Interactive Whiteboards(IWB)

The use of interactive whiteboards inside classrooms can be tailored to SMART Technologies board in 1991. Since then, it has been widely adopted as a communicative, instructive, and motivational tool with which all lessons stages can be smoothly tackled. According to Bell (2002), having IWB inside the classroom ensures an interactive environment where learner-teacher relationship is buttressed through various lesson presentation strategies and techniques. **Sandvik et al. (2012)** added that IWB assists in boosting learners' engagement and motivation aligned with fostering collaboration and teamwork using a versatility of rich learning materials. Thus, IWB assists learners in manipulating content and provides them with the opportunity to participate in games and simulations through which a more dynamic and informative learning is attained.

2.4. Video Conferencing Tools

Video conferencing tools are mobile applications that establish real-time communication between two geographically-separated parties including ZOOM, Google Meet, Skype, and Discord. The latters are installed on a portable device which enables individuals to replicate face-to-face interaction in a virtual setting as an alternative effective way to meet and share information. It is therefore widely employed inside classrooms as a means to keep one's finger on the pulse of hindrances that can come across in any teaching environment. Hence, Video Conferencing Tools can act as facilitators and time and effort saving techniques that are devoted towards creating a vicarious environment for learners to recapitulate for any shortcomings and resume a natural unremitting learning process.

II. Methods and Materials

The present study adopts a qualitative approach towards research in order to ensure valid and reliable outcomes. In that regard, two research tools were used to reach the ultimate objectives; a **VARK** questionnaire **(Version 7.0)** and a survey in Italian language addressed towards thirteen (13) advanced level students (C1) who attend an Italian Language Course at the University for Foreigners of Siena. The questionnaire aims at identifying learners' different learning styles, while the survey investigates the impact of technology on learners' motivation with regard to their learning styles inside the classroom. Both research tools were dispatched to the participants via e-mail.

Within the VARK model introduced by Fleming, the **VARK** questionnaire was outlined and designed **(2019) (Version 8.01)** which contains **16** questions to answer spread over two pages in the form of multiple choice questions (MCQ). Each of the 16 questions' choices is a daily situation an individual may encounter during the learning process The addressed participant can tick more than one option out of a total of four (4) as an answer for each question. At the end of the questions, learners are provided with a scoring chart which serves to identify the style category the participant can be assorted in. This can be fulfilled by calculating the sum of the answers which are bulleted as letters to be circled **(V, A, R, K),** so that the prevailing sum of the letters represents their learning style according to the **VARK** questionnaire results.

In order to gauge the effectiveness of technology on engaging and motivating learners with different learning styles, the learners' survey was divided into three sections. Section one includes demographic information about age, gender, course level, and technology experience. In section two, two questions were designed about the learning styles each learner belongs to and the most effective strategies they use in their learning experience. The last section highlights the technologies used inside the classroom and the frequency by which the teacher integrates it. It also underlines the impact of technology on learners' learning experience and learners' attitude towards using it inside the classroom.

III. Results and discussion

As noted previously, this research adopts a **VARK** questionnaire designed by Neil Fleming extracted from the VARK official website along with a survey.

The VARK questionnaire

Table 1
Description of the sample

	Number	Percentage
Answered questionnaire	13	100%
Unanswered questionnaire	0	0%
N	13	100%

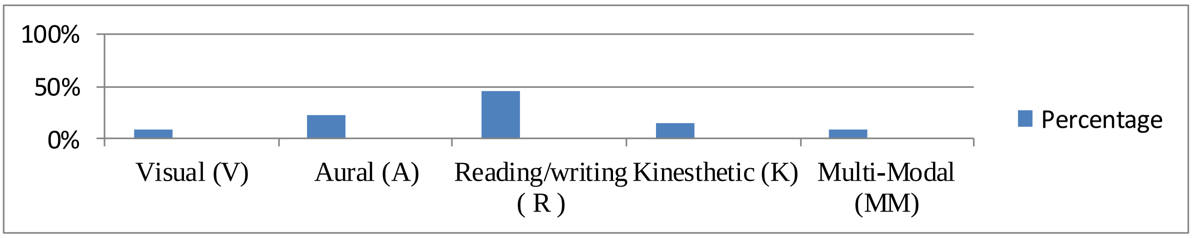
Table 1 displays the numbers of students to which the VARK questionnaire was administered where 13 out of 13 students received, answered, and submitted the VARK questionnaire.

Table 2
Students learning styles

	Number	Percentage
Visual (V)	01	8%
Aural (A)	03	23%
Reading/writing (R)	06	46%
Kinesthetic (K)	02	15%
Multi-Modal (MM)	01	8%
N	13	100%

Table 2 represents different **VARK** learning styles inside the classroom, number of students who belong to each category mentioned by the **VARK** questionnaire, in which we can find that most of the attending students were reading/writing style students according to their answers.

Fig 2. Students learning styles



In Fig 2.

46% of the answers show that students were a **reading/writing** style according to the **VARK** questionnaire; it represents **06** attending students. The following category which is the aural style marks **23%** which is in total **03** attending students. The third style is **kinesthetic** with **15%** of the total demonstrating **02** attending students. The last category is the **Visual style** with only one attendee representing **4%** of the total. The analysis also revealed a **Multi-modal** category where one learner displayed skills from the four VARK styles with 4% of the total.

Learners' survey

Section 1 : Demographic Information
Q1. Age
Table 3
Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21	4	30,8	30,8	30,8
	22	6	46,2	46,2	76,9
	23	3	23,1	23,1	100,0
	Total	13	100,0	100,0	

As displayed in table 3, the total numbers of participants is 13 among which 4 with the age of 21 and represent 30.8 % of the whole, whereas 6 are 22 years old with 46.2% and 3 participants are 23 years old with only 23.1%. The average age for participants is 22 years old.
Q2. Gender

Table 4

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	4	30,8	30,8	30,8
	Female	9	69,2	69,2	100,0
	Total	13	100,0	100,0	

Table 4 represents the number of males and females in the advanced Italian language learners group where females prevail with 69.2% representing 9 students out of 13, whereas the number of total males is 4 with 30.8%.

Q3. Technology experience

Table 5

Technology Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	100,0	100,0	100,0

Table 5 is a summary of the number of participants with technology learning experience and which represents all 13 participants having prior background of integrating technology in the learning process.

Section 2: Learning styles
Q4. Students' learning styles

Table 6
Learning styles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Visual	2	15,4	15,4	15,4
	Auditory	3	23,1	23,1	38,5
	Reading/writing	6	46,2	46,2	84,6
	Kinesthetic	1	7,7	7,7	92,3
	multimodal	1	7,7	7,7	100,0
	Total	13	100,0	100,0	

In the table above, a summary of the learning styles that govern the advanced Italian language learners group is provided where 6 learners belong to the reading/writing category with 46.2% which is the most prevailing in class. As for the auditory learning style, 3 learners displayed the characteristics of this category representing 23.1%. The third category which is the visual learning style includes only 2 learners with 15.4%, whereas the kinesthetic and multimodal learning styles are represented by only 1 student with 7.7% and the least displayed in the classroom.

Q5. Students' learning activities preferences
Figure1

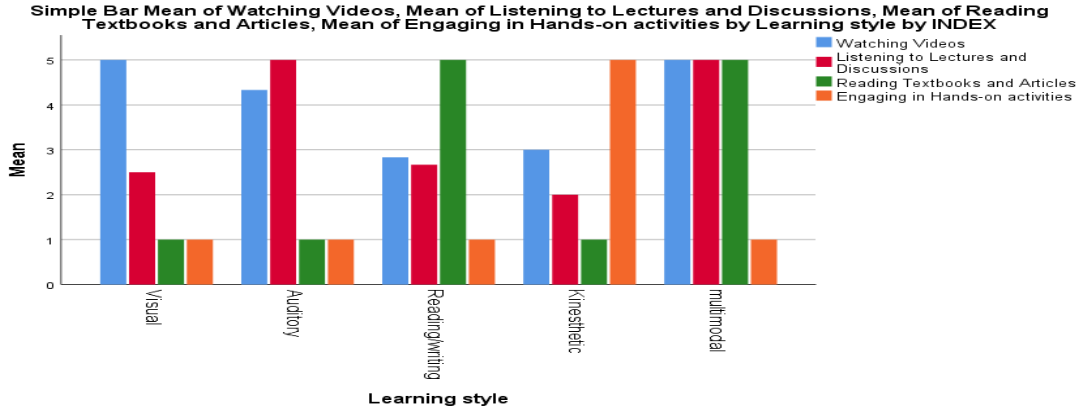


Figure 1 represents a summary of the mean of the activities that each of the learning styles refer to in their learning experience in order to retain information effectively. First, visual learners tend to watch videos as an efficient way of grasping information more than any other activity. Second, auditory style learners are mostly inclined to listening to lectures and discussions and watching videos with change in consistency for the second. Third, reading/writing learners are supportive of reading textbooks and articles inside the classroom greater than watching, listening, or engaging in active participation activities. Fourth, Kinesthetic learners displayed a high interest in being engaged in hands-on activities that require touch and movement in order to retain the information yet showed little interest in listening and reading. As for the last category which stands for the multimodal learners, they manifested a great interest in all the activities viz. watching, listening, and reading except for engaging in hands-on activities that proved ineffective in maintaining a positive attitude towards learning.

Section 3: Technology use in class
Q6. The frequency of using technology in class
Figure 2

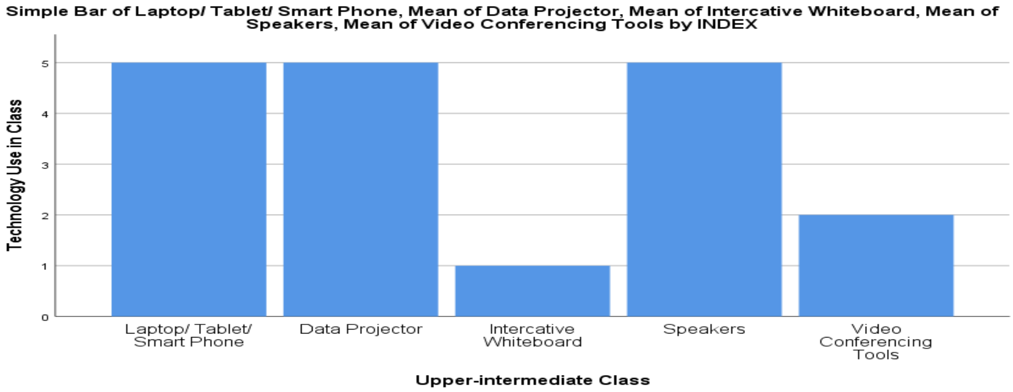


Figure 2 highlights the main technology tools used by the teacher in the Italian language advanced class; Laptops, tablets, smart phones along with the data projector and the speakers are constantly integrated in the teaching-learning process as a daily process. As for the video conferencing tools and the interactive whiteboard, they are sometimes and rarely used inside the classroom, respectively.

Q7. Impact of technology on learners' motivation
Table 7
Correlations

		Teacher technology use frequency	Technology motivation in Learning
Teacher frequency	Pearson Correlation	1	-,887**
	Sig. (2-tailed)		,000
	N	13	13
Technology motivation in Learning	Pearson Correlation	-,887**	1
	Sig. (2-tailed)	,000	
	N	13	13

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7 indicates a strong negative correlation (r = 0.887) between the teacher's frequency of using technology inside the classroom and students' motivation. This suggests that as the use of technology increases, the motivation level for non-visual styles decreases.

Figure 3

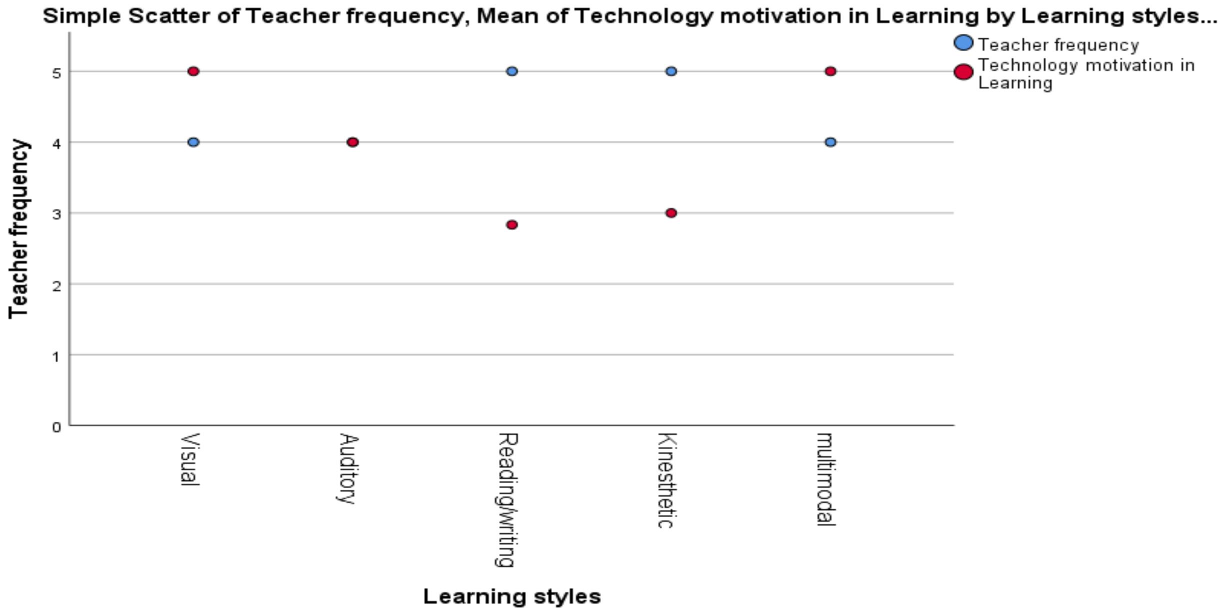


Figure 3 displays a strong negative correlation between the use of technology inside the classroom and the learners' motivation and engagement towards learning activities where technological tools are integrated as facilitators by the teacher. It explains the alteration in the level of motivation among learning styles when a technology aspect manifests in the process. Thus, both multi-modal and visual learners demonstrate a positive response and high engagement when exposed to technology, whereas auditory learners are moderately responsive to the activities involving technology. As for the kinesthetic and reading/writing styles, the motivation level and interest in the learning activity significantly decrease to the lowest level. Overall, the figure displays dissimilarity among learning styles during the process of learning when technology is on display.

Q8. Learners' attitude towards technology

Table 8

Learners' attitudes towards technology	N	%
Gives easy access to information	13	100%
Boosts learners' engagement	3	23%
Facilitates collaboration	5	38%
Enhances learners' motivation	6	46%
Incorporates different learning styles	2	15%
Leads to less learners' interaction	8	62%
Distracts non-visual learners	5	38%
Affects the development of many skills	12	92%
Other	0	0%

Table 8 is a summary of how learners perceive technology in class according to their learning styles where all 13 learners (100%) concurred in its being an effortless source of obtaining information. That said, 12 learners who represent 92% admitted that technology has a moderate impact on the development of various skills that all individuals acquire during life-long learning. Eight learners have also agreed to the fact that it limits learners' interaction and communication with classmates inside class and 5 learners emphasised the aspect of distraction it casts on most non-visual learners. Furthermore, some learners acknowledged the role of technology in facilitating collaboration as well as increasing motivation during the learning process, whilst few learners held a strict opinion that technology does not serve all learning styles and maintains a low engagement attitude towards learning for most learning styles.

Discussion

The present study shed light on the adoptability of technology as a motivational instrument to teach Italian as a foreign language in an advanced-level class. It explained the role technology played as a facilitator in the teaching process and the effects it had on the four different VARK learning styles' motivation inside the classroom. Hence, the research was designed to inquire about the positive or negative impact of technology on the motivation level of visual, auditory, reading/writing, kinesthetic and multimodal learners inside an advanced level Italian language class at the University for Foreigners of Italy. In order to reach the study objectives, a qualitative approach was followed in which a VARK questionnaire as well as a learner's survey on the impact technology has on each learning style was addressed to 13 students attending the C1 Italian Language course.

The VARK questionnaire helped to uncover the learning styles governing the advanced class of 13 students where 1 was identified as multimodal, 1 as visual, 3 as auditory, 6 as reading/writing, 2 as kinesthetic. The styles were marked by the learning strategies preferences of the learners to whom the questionnaire was addressed. For both multimodal and visual learners, they tend to rely on sight in grasping new knowledge by enjoying the watch of videos displayed by the teacher via the data projector. As for auditory learners, they display more concentration when exposed to audios and discussions inside class. The fourth learning style is reading/writing which is recognized for reading written materials, whereas the last learning style is kinesthetic which is driven by the sense of touch and movement.

The second tool that was addressed towards the advanced class attendees is a survey of three sections; section one is for demographic information, section two is for the frequency of using technology inside the classroom, and section three is for the impact of technology on learners motivation and their attitudes towards it. By following the Pearson correlation analysis method, the data was qualitatively analyzed and graphically presented where the findings revealed that most learning styles inside the classroom were not intrigued by the use of technology. The latter was in the form of playing videos via the data projector or using the speakers for audios related to the electronic course book displayed on learners' smart devices. Therefore, visual and multimodal learners demonstrated a positive attitude towards the frequent use of technology, whilst other styles displayed variances in embracing the integration of technological tools in the process. In other words, the higher is the frequency of using data projectors and speakers inside the classroom the lower is the motivation level for non-visual learners and conversely. All in All, we were able to reach the traced objectives by answering the research questions and refuting the null hypothesis which proved inapplicable in our research. Hence, technology affects non-visual learners' motivation and engagement to a degree where it is no longer effective in delivering information and contributing to a life-long learning experience.

The findings of the present study will be an asset in investigating the most effective strategies that all learning styles refer to when engaging in the learning process with the integration of modern teaching technologies. It would form a base ground to study the reasons behind the reluctance of non-visual learners towards the use of technology inside classrooms and its impact on their engagement and grasp of information. It would also pave the way towards designing novel effective teaching strategies and techniques that rhyme with the needs of all learning styles.

IV. Conclusion

With the advance of technology in all life domains including the teaching field, the present study is an attempt to investigate the impact of technology on advanced Italian learners' motivation at the university of foreigners in Italy with reference to the VARK learning styles identified by Fleming (1987). It seeks to answer the questions on the frequency of using technology inside the classroom and its effect on the motivation of learners with different learning styles. It therefore employs the VARK questionnaire in order to identify the learning style and strategies for each learner along with a learner's survey that served to study the relationship between the frequency of using technology inside the classroom and the level of learners' motivation and engagement with the input. The research outcomes revealed that technology is part and parcel of the teaching-learning process and that it is frequently integrated in various learning tasks. It also gauged the linkage between the tendency to use technology and its impact on VARK learners' engagement and willingness to indulge in the learning process. The results uncovered that with the increase in the use of technology inside the classroom, non-visual learners viz. auditory, reading/writing, and kinesthetic learners display a slow response with disparities to the input they are exposed to. On the other hand, visual and multimodal learners were highly responsive and completely engrossed in the learning process. All in all, technology proved to be an effective tool in the teaching process acting as a facilitator and a credible source of information; nevertheless, it might impose some limits on non-visual learning styles with distinct learning strategies. Thus, non-visual learners are not able to process information with the presence of technology as visual and multimodal learners do. They demonstrate less engagement in learning which can be a future research aspect that would elicit the reasons behind this retract in accepting one of the most effective techniques human kind has ever come across.

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Appendices

Learners' survey

The present survey aims at understanding how learners with different learning styles (Visual – Auditory – Reading/Writing – Kinesthetic) perceive the use of technology in classrooms. Therefore, you are kindly asked to answer the survey's questions according to your preferences.

Thank you

Section 1: Demographic information

1. **Age:** ________
2. **Gender:** **1.** Male **2.** Female
3. **Course level:** ______________
4. Do you have previous experience with technology in education?
   1. Yes 2. No

Section 2: Learning Styles

1. Which learning style do you think you belong to?
   a. Visual b. Auditory c. Reading/ Writing d. Kinesthetic
   e. Multimodal
2. Which of the following learning activities do you find most effective?
   a. Watching videos b. Listening to lectures or discussions c. Reading textbooks or articles d. Engaging in hands-on activities.

Section Two: Technology Use in Class

1. How often does your teacher use technology in class?
   a. Never b. Rarely c. Sometimes d. Often e. Always

2. How often are these technologies used in your class?

Technologies	**Frequency of Use**				
1. Laptop /Tablet/ smart phone					
2. Data Projector					
3. Interactive whiteboard					
4. Video conferencing tools					
5. Speakers					
6. Other					

3. Does technology have an impact on your learning experience?
   a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree
4. To what extent do you find technology motivating in your learning?
   b. A great deal b. much c. somewhat d. little e. never

5. **Please tick all that applies. Technology …**

a. Gives easy access to information
b. Boosts learners' engagement
c. Facilitates collaboration
d. Enhances learners' motivation
e. Incorporates different learning styles
f. Leads to less learners' interaction.
g. Distracts non-visual learners.
h. Affects the development of many skills.