Comparing Visual Thinking and Flipped Classroom in International Relations Teaching

Comparación entre el pensamiento visual y el aula invertida en la enseñanza de las relaciones internacionales

https://doi.org/10.4438/1988-592X-RE-2025-412-739

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Abstract

Developments in teaching innovation have recently seen a great push towards formats that can increase and improve students' active learning. A wide array of teaching formats based on this concept has been implemented across various university disciplines, from natural to social sciences. Most empirical analyses have so far focused on comparing the effects of traditional and active teaching formats on students' academic performance. This has improved scientific knowledge about the benefits and drawbacks of several teaching formats. Nevertheless, contrasting traditional lecturing formats with activity-based approaches to active learning risks yielding simplistic and unhelpful dichotomies between "traditional" and "active" instruction. In this article, we follow a different strategy. By using non-parametric tests, we compare two different teaching formats based on two different active learning strategies, such as flipped classroom and visual thinking. Students' performances in the two groups, composed of undergraduate

Received 20/06/2025 Accepted 09/12/2025

students enrolled in a dual degree in International Relations and Global Communication, are compared in terms of academic results, that is their grades, and a set of soft skills, such as learning perception, self-efficacy, and teamwork. The study detects a relevant effect in terms of grades, with students through the flipped format outperforming students taught through the visual thinking format. On the other hand, the study detects only one relevant effect in the soft skill of learning perception, with students in the flipped format scoring higher than students in the visual thinking format. While this does not necessarily indicate that FC formats are more effective than VT formats, this difference in students' grades and learning perception can signal that different teaching formats can be differently but equally useful depending on the teaching goal or need.

Keywords: Active learning, International Relations, Visual Learning, Films, Documentaries, Flipped Classroom, Higher Education.

Resumen

Los avances en la innovación docente han experimentado recientemente un notable impulso hacia formatos capaces de incrementar y mejorar el aprendizaje activo del estudiantado. Una amplia variedad de formatos de enseñanza basados en este concepto se ha implementado en diversas disciplinas universitarias, desde las ciencias naturales hasta las ciencias sociales. La mayoría de los análisis empíricos se han centrado hasta ahora en comparar los efectos de los formatos de enseñanza tradicionales y activos sobre el rendimiento académico del alumnado. Esto ha permitido ampliar el conocimiento científico sobre los beneficios y limitaciones de los distintos formatos de enseñanza.

No obstante, contrastar los formatos tradicionales de clase magistral con enfoques basados en actividades orientadas al aprendizaje activo conlleva el riesgo de generar dicotomías simplistas y poco útiles entre la instrucción «tradicional» y la «activa». En este artículo seguimos una estrategia distinta. Mediante el uso de pruebas no paramétricas, comparamos dos formatos de enseñanza basados en dos estrategias diferentes de aprendizaje activo: el aula invertida (*flipped classroom*) y el pensamiento visual (*visual thinking*).

Se comparan los resultados de los dos grupos, integrados por estudiantes de grado matriculados en un doble programa en Relaciones Internacionales y Comunicación Global, tanto en términos de rendimiento académico —es decir, sus calificaciones— como en un conjunto de habilidades blandas, tales como la percepción del aprendizaje, la autoeficacia y el trabajo en equipo. El estudio detecta un efecto relevante en las calificaciones, ya que el estudiantado que siguió el formato de aula invertida obtiene resultados superiores a quienes fueron enseñados mediante el formato de pensamiento visual. Por otro lado, el estudio identifica únicamente un efecto significativo en la habilidad blanda de percepción del aprendizaje, con puntuaciones más altas entre el estudiantado del formato de aula invertida en comparación con el del formato de pensamiento visual.

Si bien esto no indica necesariamente que los formatos de aula invertida sean más eficaces que los de pensamiento visual, la diferencia observada en las califi-

Received 20/06/2025 Accepted 09/12/2025

caciones y en la percepción del aprendizaje puede señalar que distintos formatos de enseñanza pueden resultar, de manera diversa pero igualmente útil, adecuados según el objetivo o la necesidad docente.

Palabras clave: Aprendizaje activo, Relaciones Internacionales, Pensamiento Visual, Películas, Documentales, Clase Invertida, Educación superior.

Introduction

In the last several decades, university education has seen a significant push towards teaching formats that can enhance students' "active learning." Instead of traditional formats, in which the professor gives frontal lectures and students take notes that they will use after class to try memorizing the class contents (Bligh 1998), teaching and learning are increasingly required to become collaborative, "problem-based", digitally-rich, and capable of fostering critical thinking and teamwork (Collins and Halverson, 2010). This is supposed to improve not only students' lower-order- skills, such as the "transfer" and "memorization" of "basic knowledge," (Omelicheva and Avdeyeva, 2008) but also their "higher-order skills", such as analysing, synthesizing, and evaluating (Anderson and Krathwohl, 2001).

Many teachers have answered this call by implementing active learning strategies in their classes, in both social and natural sciences (Strelan et al., 2020; Galindo-Domínguez, 2021). As a result, it has become more common to design studies aimed at empirically understanding and assessing the effectiveness of such strategies on students' learning (Hussain et al., 2023; Naing et al., 2023). First examples of these studies tended to compare traditional and active teaching formats (Cheng et al., 2018; Talbert and Bergmann, 2017; Bergmann and Sams, 2012;). These comparisons have significantly augmented the collective knowledge about their possible benefits and drawbacks. Nevertheless, merely opposing traditional and active teaching formats carries the risk of oversimplifying an important debate, exaggerating the benefits of active learning strategies, and leading to the insufficient conclusion that active is better than traditional learning, often disregarded as passive learning.

For this reason, following an increasing trend (Betti et al., 2022; Jensen et al., 2015; Lai & Hwang, 2016), this article investigates the effectiveness of active learning in the field of International Relations (IR) teaching, by comparing two teaching formats both based on active learning strategies. Two groups of students were taught the same IR class. One was taught through a Flipped Classroom (FC) format, while the other through a

Received 20/06/2025 Accepted 09/12/2025

Visual Thinking (VT) format based on films and documentaries. Their performances were compared in terms of grades and a set of soft skills, such as teamwork, self-efficacy, and learning perception.

On the one hand, our results identified a relevant effect in terms of grades, with students taught through the FC format outperforming students taught through the VT format. On the other hand, the only soft skill in which the study detected a relevant effect was learning perception, with FC students scoring higher than VT students.

Flipped Classroom and Visual Thinking

The FC is based on the idea that "that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class" (Bergmann and Sams, 2012, p. 13). Traditional in-class lectures, based on the professor's frontal teaching of contents, are replaced by materials, usually pre-recorded video-classes, that students are required to study before class. Class time is, thus, spent entirely on solving students' doubts about the contents and administering practical exercises, such as problem-based discussions, presentations, or group work, designed to apply what students have learned through the video-lectures. "With content provision moved outside the class", class time can be more efficiently used to perform activities that promise to foster students'…problem solving and teamwork abilities (Jenkins, 2015, p. 607). The overall goal is to turn the classroom "into a dynamic, interactive learning environment", in which teachers assist students in their own learning process, fostering a more creative engagement with the subject (Berge and Nederveld, 2015, p. 163).

VT was originally defined as "an inquiry-based method", aimed at developing "students' thinking skills by looking at and discussing art" (Tisham et al., 1999, p. 1). The main idea is that through the observation of images, learning can become more interactive and entertaining, fostering students' capacity to understand abstract and difficult concepts through a visual experience. Far from being limited to artistic images, VT teaching formats can be based on a wide array of visual materials, such as films, documentaries (Van Munster and Silvest, 2015; Heck, 2017), comics (Schmid, 2020), or videogames (Valeriano & Habel, 2016), integrating traditional teaching instruments, such as readings and frontal lectures.

Previous studies

Studies that measured the effects of active learning techniques on students' learning usually operationalize academic achievement as grades

Received 20/06/2025 Accepted 09/12/2025

obtained in the assignments and exams. However, several studies also aimed to assess the effects of active learning on soft skills, understood as "interpersonal qualities…and personal attributes that one possesses" (Robles, 2012, p. 453). Teamwork is one of the most studied soft skills. It is usually referred to as the capacity to "direct and coordinate the activities of other team members", "anticipate other team members' needs", and "apply" and "adjust strategies" (Salas et al., 2005, pp. 558-559). Learning perception is defined as the "cognitive effort required during learning" (Deslauriers et al., 2019: 19251), usually operationalized as students' satisfaction or lack of satisfaction with teaching formats. Finally, self-efficacy is often defined as "students' beliefs about whether they are able to show certain learning behaviour" (Baars and Wijnia, 2018, p. 127) based on their convictions about their own capacity to "produce designated levels of performance" (Bandura, 1994, p. 2).

Unlike other disciplines, especially natural sciences (Naing et al., 2023), there has been relatively less interest for active learning techniques in Political Science (PS) and International Relations (IR), especially in terms of empirical analyses on the effectiveness of such techniques on students' learning. As to FC, there are some PS and IR studies that compared traditional teaching formats, centred around the professor and the exposition of contents during class time, with inverted formats, based on the substitution of traditional in-class teaching with pre-recorded video-lectures to be watched before class, so that class time can be devoted to exercises and applications. Some detected an improvement in students' grades (Touchton, 2015), while others did not find any significant difference between a traditional and a flipped format in terms of students' academic achievement (Lambach et al., 2017). Similar diverging results can be found in those studies that compared traditional and flipped formats in terms of students' soft skills. While some identified an improvement in the teamwork skills of students taught through a FC (Cit., p. 563), others detected a worsening of students' teamwork abilities in a FC (Jenkins, 2015, p. 610). As to learning perception, available studies again diverge. While some observed that students fundamentally split between those who prefer a flipped format and those who prefer a traditional one (Lambach et al., 2017), others detected a students' preference for "mixed class sessions", rather than "having all flipped-class sessions" (Jenkins, 2015, p. 610). Finally, to our knowledge, there are no PS or IR studies available on the relation between FC and students' self-efficacy.

Nevertheless, following an impulse coming from other disciplines, several PS and IR studies found it more useful to test the effectiveness of

Received 20/06/2025 Accepted 09/12/2025

the FC format against "a control model that uses active learning" (Jensen et al., 2015, p. 11). This reduces the risk of examining teaching formats that are too different to be compared and increases the opportunities to "parse out the effects and pinpoint a specific causal factor" (Cit., p. 2). Some identified an improvement in students' grades who were taught through a FC, in comparison to students that received online synchronous lectures (Whitman Cobb, 2016). In a similar way, some found that students' grades can improve with a FC, if it is designed in combination with other forms of remote teaching, both offline and online (Van der Zwan and Afonso, 2019). In terms of soft skills, one of the very few studies that we could find that compared the flipped format with other active learning strategies, detected a simultaneous improvement in academic performance and learning perception, with students expressing satisfaction with the FC (Whitman Cobb, 2016).

Unlike other disciplines (Yen et al., 2018; Lin et al., 2019), in which there is a clearer consensus in favour of the benefits of the flipped teaching format on both students' academic achievement and soft skills, there is less observed agreement in the fields of PS and IR. Different studies have reached dissimilar and partially conflicting conclusions. This adds to the impression of a discipline in which interest and curiosity for teaching innovation are still marred with prudence and scepticism. The first goal of this study is, thus, to investigate whether a teaching format based on FC can improve students' achievement in terms of grades and soft skills.

These tendencies are even more visible in the study of the effectiveness of VT teaching formats on Social Science subjects. In disciplines, such as History, the use of visual materials, including films, has been common (Rose, 2016). Even though most available studies have been largely anecdotical and not based on systematic empirical analyses, some historians found that using films in History classes positively impacted on students' understanding of complex situations (Wagner, 2018). However, those same historians also reported on the difficulty in using visual materials, such as films, in a History class, either due to the difficulty for students to discern facts from visual and artistic interpretations (Stoddard, 2012) or due to a lack of visual media analytical skills on the teachers' part (Wagner, 2018).

Even more "weariness" (Dean, 2019, p. 257) can be observed in the use of VT formats in PS and IR. For some, the scepticism about the "feeling and affective dynamics that underpin everyday forms of political participation and engagement" would foster a "squeamishness" of these disciplines about using visual materials (Cit.). Possibly because of this,

Received 20/06/2025 Accepted 09/12/2025

not so many PS and IR teachers have been willing to use visual materials in their classes, although this tendency seems to be changing. Recent studies, for example, detected a students' preference for classes taught through image-rich slides rather than text-heavy slides. Students tend to feel more engaged with the class contents. Moreover, they would associate a larger cognitive overload with text-heavy slides, as they would generate a constant dilemma between reading the slides and listening to the teacher. Images would, thus, improve their satisfaction and learning perception about the class. However, the same study also warns about the abuse of images during the explanation of contents, not only because their content can be at times controversial but also because they are not always sufficient to communicate complex concepts or data. The risk of oversimplification could reduce the students' capacity to critically read and analyze information presented in specialized books and articles (Roberts, 2017).

Several other studies have compared traditional and VT formats based on the use of films. Most of them have identified positive effects on students' soft skills, such as creative thinking (Valeriano, 2013; Kuzma &Haney, 2001; Weber, 2001) and analytical skills (Lieberfeld, 2007). Films can increase students' capacity for analysis and help them connect and contextualize historical facts and characters (Gokcek & Howard, 2013). In a different way, others have warned about the possible downsides of using films for teaching purposes, for example when they oversimplify reality through inaccurate representations of facts (Kuzma & Haney, 2002, p. 93) or when they contain stereotypical and biased representations of specific cultures (Giglio, 2002). Even though most of these studies are not based on systematic empirical analyses, some have also tried to observe the possible effects of films on students' academic achievement and learning perception. Some identified benefits in using films, such as an improvement in students' capacity to grasp and retain concepts (Sunderland et al., 2009), thanks to the fact that films would help "make abstract theories and concepts more understandable" (Gokcek & Howard, 2013, p. 441; Kiasatpour, 1999), entertaining (Kuzma & Haney, 2001, p. 47), or engaging (Gokcek & Howard, 2013; Iretzberger, 2021).

Nevertheless, other observations noted that students' learning perception might not necessarily benefit from using films. At times, films can increase the feeling of a bigger workload (Kiasatpour, 1999, p. 85) or even confusion, especially because students can find it hard to distinguish between facts and fiction (Lieberfeld, 2007, p. 573). Even when films can occasionally improve students' understanding of complex processes, such as the ones related to decisionmaking, their comprehension

Received 20/06/2025 Accepted 09/12/2025

of "the theoretical concepts and how they could be applied" might not be enhanced (Inoue & Krain, 2014, p. 20). One of the few empirical analyses based on quantitative methods identified contradictory results. Films can increase students' comprehension, engagement, and grades, but they can equally treat issues in a simplified way for the sake of artistic representation, thus reducing students' capacity to see a clear relation between academic content and fictional representations (Swimelar, 2013, p. 24). All these analyses were based on comparisons between traditional and VT teaching formats. The only exception that we could find was a study that compared two different teaching formats both built around active learning strategies, one based on films and the other based on games, detecting that the latter had a more beneficial effect on students' grades and learning perception than the former (Brandle, 2020).

In conclusion, unlike other subjects in which one can find a clearer consensus on the benefits of using films for students' achievement and satisfaction, studies from PS and IR offer a wider range of results. These divergences could be partially motivated by the still relative lack of studies. Few of them are based on systematic and empirical analyses of the effects of using films on students' grades and soft skills. Moreover, most of them are based on anecdotical comparisons between traditional lectures and the use of films. This leads to the need to test the possible benefits and drawbacks of using VT formats against other active learning formats in a more systematic way. PS and IR have been less prone to using VT formats in the classroom, making the study of their possible potential for teaching purposes still relatively underexplored. The second goal of this study is, thus, to investigate whether a teaching format based on VT can improve students' achievement in terms of grades and soft skills.

For this reason, in this study, we propose to analyse two different teaching formats both based on active learning strategies, one designed in a flipped way and the other around the use of visual materials, such as films and documentaries. This aims to add empirical data on the effectiveness of two important active learning strategies for students' learning, contributing to a larger debate, still partially underdeveloped in PS and IR, on what teaching formats can be implemented to improve students' performance and experience.

Research Design and Methods

Our goal is to discover whether teaching strategies based on the FC and VT can lead to an improvement in the students' academic performance in terms of both hard skills, that is their grades, and soft skills, such as teamwork, self-efficacy, and learning perception.

Received 20/06/2025 Accepted 09/12/2025

This quasi-experimental study was administered in two different sections of an undergraduate second-year mandatory core class, called Comparative Political Systems, as part of a Dual Degree in International Relations and Global Communication. One group was administered half of the class – 7 out of 14 weeks of class – through an FC methodology, while the other group was administered the same half of class through a VT methodology. Both teaching formats were based on the same contents, taught by the same professor, and administered for the second seven weeks of the class.

For the FC format, the professor first recorded a set of video-lectures, with the support of the Teaching Innovation Unit at the University where the study took place. Videos included explanations of the contents of the class and specific sections highlighting the key concepts. Students were required to watch them carefully before coming to class. Based on those video-lectures, students were, then, required to perform a variety of activities in the classroom, under the supervision of the professor. For example, the professor asked questions to stimulate individual or group reflection about how to define and link specific political concepts and categories. In other cases, students were required to read and then make comments about specific readings selected by the professor and related to the video-lectures. Finally, students were asked to work individually or in group to present to the professor and the rest of their classmates the findings of small research tasks to be previously performed at home. The goal of these activities was to promote individual and collective reflection on complex issues, foster cooperative learning, and increase the possibility for the professor to provide instant and public feedback.

For the VT format, students had to watch a variety of visual contents before class time, such as documentaries and films, selected by the professor and related to some of the key concepts of the class. Visual contents were assigned on a weekly basis. After each assignment, students were required to go to class and participate in activities designed by the professor and aimed at reinforcing the knowledge and understanding of the main concepts of the class. These activities included class debates and short presentations based on small research tasks about the contents of the assigned visual materials. Moreover, by working in group outside the classroom, students were asked to produce brief visual contents, such as recorded videos or selections of photographs, through which they delved into specific concepts and phenomena related to the contents of the class. This way, students did not merely act as passive consumers of visual content. Films and documentaries became instruments to be analysed, evaluated, and used as starting points for a deeper reflection based

Received 20/06/2025 Accepted 09/12/2025

on small research assignments. This allowed them to experiment with skills, such as analyzing, comparing, contrasting, and synthesizing. In addition, through the assignments that involved their own production of visual contents, students could train themselves to visually communicate the results and findings of their learning process. Thus, visual contents were used both as teaching resources and students' own contributions.

The first seven weeks of the class were administered through a semi-traditional format based on a combination of frontal lecturing and active learning techniques, such as presentations, teamwork activities, and debates. Two hours per week were dedicated to frontal lecturing, while the other two were dedicated to students performing a variety of class activities based on their active participation, such as presentations of small research tasks, debates, or teamwork projects.

As Table 1 shows, we could not collect the data for all the students enrolled in the two groups, as some students did not answer any of the surveys.

Table 1. Description of the sample

	Group 1: Flipped Classroom Methodology	**Group 2: Visual Thinking Methodology**
Students enrolled	45	62
Sample	31 (69 %)	42 (68 %)

Both groups were analysed to find out whether there were significant differences in terms of their academic achievement prior to the start of the class that was used for the study. After observing that the series are normal, the t test of independent samples shows that there were no significant differences either in the average grades or in the variance among the two groups (See table 2). This allowed to detect that there were no significant differences between the two groups in terms of prior academic achievement. No significant difference was found either in terms of students' socio-economic level. Finally, all the students are Spanish nationals and were trained in the traditional Spanish educational system, which is based on traditional frontal lecturing. This way, we could establish that the two groups were comparable.

To answer the two following research questions, this study employs a methodology based on comparing the average results of each group of students, for both hard and soft skills. The goal is to discover whether the teaching format influences results. As explained below, the type of test used depends on whether the data series are normal or not.

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Results

Research question 1 (RQ1): Academic achievement (hard skills)

Does a teaching strategy based on FC or VT improve students' academic performance measured in terms of grades?

This is the first goal of our study. To evaluate the impact of FC and VT in the students' academic results measured in terms of grades, we considered:

- the average of students' academic transcripts for each group.
- the academic results obtained in an exam that students took at the end of the first seven weeks administered through a semi-traditional teaching format.
- the results obtained in an exam that was administered at the end of the two teaching formats administered, respectively, through FC and VT.
- and the results obtained in the final exam administered at the very end of the class. This final exam was mostly based on questions aimed at testing students' capacity to retain the contents of the class.[1]

Due to the fact that some of these series were not normal[2], we performed the non-parametric Krusal-Wallis test to compare the academic results obtained by the students of one group with those obtained by the students of the other group. Moreover, to analyze the evolution of students' grades throughout the duration of the study, we performed a Wilcoxon test. Results appear in Table 2.

[1] Data range from 0.00, being the lowest grade, to 10.00, being the highest grade. The minimum grade to pass an exam is 5.00.

[2] Normality test.

Normality Test Hard Skills						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	p-value	Statistic	df	p-value
No Visual Thinking Midterm test	0,160	59	0,001**	0,880	59	0,000**
Visual Thinking Midterm test	0,117	59	0,045*	0,947	59	0,013
Visual Thinking Group Final Grade	0,112	59	0,064	0,960	59	0,051
Visual Thinking Group academic background	0,096	59	0,2	0,971	59	0,166
Flipped Classroom Midterm test	0,180	31	0,012	0,932	31	0,048*
Flipped Classroom Group academic background	0,096	31	0,2	0,969	31	0,496
Flipped Classroom Group Final Grade	0,108	31	0,2	0,942	31	0,094
No Flipped Classroom Midterm test	0,148	31	0,082	0,956	31	0,235

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Table 2. Comparison of academic achievement in the FC and VT teaching formats in terms of hard skills (grades)

(1)	(2)	p-value	effect size
Visual Thinking Group Academic Background	Flipped Classroom Group Academic Background	0,072	0,328
No Flipped Classroom Mid-term Test	No Visual Thinking Mid-Term test	0,315	0,106
Flipped Classroom Mid-Term test	Visual Thinking Mid-Term test	0,000**	0,576
Flipped Classroom Mid-Term test	Flipped Classroom Group Final Grade	0,695	0,070
Visual Thinking Mid-Term test	Visual Thinking Group Final Grade	0,000**	0,784
Visual Thinking Group Final Grade	Flipped Classroom Group Final Grade	0,013*	0,262
Flipped Classroom Group Academic Background	Flipped Classroom Group Final Grade	0,005	0,505
Visual Thinking Group Academic Background	Visual Thinking Group Final Grade	0,361	0,119

As table 2 shows, our analysis detects a significant improvement in students' academic achievement measured in terms of grades when receiving the FC modality. Students' improvement is the result of the flipped teaching format used. This is demonstrated by the fact that their grades in the end of the first section exam (where the two groups of students received the class in the same semi-traditional format) are statistically similar, with a small effect size. This means that the improvement in their grades, when receiving the class in the flipped format, can be attributed to the teaching format.

Along these lines, our analysis detects a statistically significant difference in the exam grades that took place at the end of the two teaching formats and that were administered, respectively, through FC and VT. In this exam, students were evaluated for the very same contents, with the only difference being that such contents had been explained through FC to one group and VT to the other group. In this case too, students who received the class in the flipped format obtained better grades than students who received the class in the visual format. As can be observed, the effect size is relatively large. This means that not only is there a difference in grades, but also that the difference is significant.

Finally, this improvement can be observed also when analyzing the final grades of the class, which is the average of all the grades that they obtained throughout all the sections of the class. However, as can be observed, the improvement is relatively small.

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Based on these results, it can be affirmed that the FC format was more effective than the VT format at improving students' grades.

Research question 2 (RQ2): Soft skills

Does a teaching strategy based on FC or VT improve students' academic performance in terms of soft skills?

This is the second goal of our study. To evaluate the impact of FC and VT on students' soft skills, operationalised in terms of a survey based on ten variables related to self-efficacy, six variables related to teamwork, and one variable related to learning perception (see table 3), we performed two tests in each group, one at the beginning and one at the end of the class to find out whether there was any change in each of the variables considered.

Table 3. Soft skills survey[3]

	Self-efficacy	Completely disagree	Completely agree
X1	I think I am going to get some excellent grades this year.		
X2	If I make an effort, I think I have enough capacity to achieve a good academic record.		
X3	I believe that I am able to understand even the most difficult topics in this course.		
X4	I think I have enough capacity to understand a subject, quickly and well.		
X5	I think I can pass the courses quite easily and even get good grades.		
X6	Although teachers are demanding and strict, I have great confidence in my own academic ability.		
X7	I think that I am prepared and well qualified to achieve academic success.		
X8	When they ask me to do projects or homework, I am sure that I will do them well.		
X9	I work effectively in any team, no matter who the teammates are.		

[3] The Institute of Science Education at the University where the study took place provided the questionnaire. It was based on established questions previously used by this Institute. A pretest was done with five students to validate its wording and comprehension.

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	Self-efficacy	**Completely disagree**	**Completely agree**
X10	Considering the difficulty of the degree, what I am learning, and my own abilities, I think I'll be fine when I finish (the degree).		
	Teamwork[4]	**Very negative perception**	**Very positive perception**
X11	Participation in teamwork sharing information, knowledge, and experiences.		
X12	Acceptance and compliance with the rules agreed upon in the group (deadlines, parts of the work, format, etc.).		
X13	Action to face team conflicts in this subject.		
X14	Commitment to the management and operation of the equipment		
X15	Management of meetings effectively.		
X16	Communication and cohesion within the group.		
	Learning perception	**Few**	**A lot**
X17	Regardless of your results in the exams, think how much you will learn in this subject about Comparative Political Systems.		

After having observed this change, defined as "C" for each soft skill, we analysed whether such a change was the same in case of using the FC or VT. This way, we compared the change observed in each of the soft skills in the teaching format based on the FC with the changes observed in each of the soft skills in the teaching format based on VT. Due to the fact that not all series were normal[5], in order to homogenise the analysis, we used non-parametric techniques of analyses that are less restrictive,

[4] Before the study, students had already attended a class of a mandatory diploma in "Development of Personal, Communication, and Professional Abilities, offered by the University where the study took place. This class was called "Teamwork." This class provided them with an initial perception of their teamwork skill. Such starting perception was measured at the beginning of the study. We presupposed that this perception was superior to zero, due to the students' previous attendance of the "Teamwork" class. Upon finalising the study, we again measured this perception, by considering whether it had improved or worsened compared to the initial one.

[5] Normality Test, whereas V indicates that change is computed within the VT format and F is computed within the FC format.

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such as the median test, the Mann-Whitney U test, and the Kruskal-Wallis test. Results appear in table 4.

Normality Test Soft Skills						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	p-value	Statistic	df	p-value
C1V	0,323	31	0,000**	0,799	31	0,000**
C2V	0,257	31	0,000**	0,841	31	0,000**
C3V	0,203	31	0,002**	0,922	31	0,027**
C4V	0,303	31	0,000**	0,834	31	0,000**
C5V	0,302	31	0,000**	0,852	31	0,001**
C6V	0,286	31	0,000**	0,847	31	0,000**
C7V	0,284	31	0,000**	0,847	31	0,000**
C8V	0,277	31	0,000**	0,849	31	0,000**
C9V	0,264	31	0,000**	0,857	31	0,001**
C10V	0,228	31	0,000**	0,900	31	0,007**
C11V	0,238	31	0,000**	0,852	31	0,001**
C12V	0,281	31	0,000**	0,875	31	0,002**
C13V	0,321	31	0,000**	0,829	31	0,000**
C14V	0,291	31	0,000**	0,835	31	0,000**
C15V	0,308	31	0,000**	0,824	31	0,000**
C16V	0,259	31	0,000**	0,855	31	0,001**
C17V	0,221	31	0,001**	0,879	31	0,002**
C1F	0,370	31	0,000**	0,731	31	0,000**
C2F	0,323	31	0,000**	0,827	31	0,000**
C3F	0,297	31	0,000**	0,848	31	0,000**
C4F	0,371	31	0,000**	0,718	31	0,000**
C5F	0,266	31	0,000**	0,846	31	0,000**
C6F	0,227	31	0,000**	0,870	31	0,001**
C7F	0,261	31	0,000**	0,886	31	0,003**
C8F	0,184	31	0,009**	0,932	31	0,051
C9F	0,339	31	0,000**	0,742	31	0,000**
C10F	0,292	31	0,000**	0,880	31	0,002**
C11F	0,328	31	0,000**	0,765	31	0,000**
C12F	0,394	31	0,000**	0,729	31	0,000**
C13F	0,210	31	0,001**	0,937	31	0,067
C14F	0,310	31	0,000**	0,834	31	0,000**
C15F	0,278	31	0,000**	0,836	31	0,000**
C16F	0,258	31	0,000**	0,854	31	0,001**
C17F	0,268	31	0,000**	0,859	31	0,001**

Received 20/06/2025 Accepted 09/12/2025

Table 4. Comparison of changes in the soft skills between VT and FC teaching formats

Variable	Median Test	Mann-Whitney U Test	Kruskal-Wallis Test
C1	0,169	0,174	0,174
C2	0,538	0,329	0,329
C3	0,057	0,073	0,073
C4	0,849	0,618	0,618
C5	0,311	0,244	0,244
C6	0,653	0,735	0,735
C7	0,834	0,476	0,476
C8	0,744	0,866	0,866
C9	0,815	0,995	0,995
C10	0,412	0,249	0,249
C11	0,255	0,347	0,347
C12	0,466	0,861	0,861
C13	0,417	0,101	0,101
C14	0,849	0,981	0,981
C15	0,972	0,428	0,428
C16	0,925	0,699	0,699
C17	<,001***	0,002***	0,002***

As Table 4 shows, unlike with grades, our analysis does not detect any improvement in terms of students' soft skills either in the section administered through FC or in the one administered through VT. No statistically significant differences can be observed in either format. The only exception is the difference that can be observed in terms of learning perception, understood as how students expect that the teaching format can affect their grades. Those who received the class through the flipped format tend to perceive that they are going to obtain better grades, as compared to the perceptions of those who received the class in the visual format.

Discussion

Our study corroborates previous ones that detected a positive impact of FC on both students' grades and learning perception (Whitman Cobb, 2016; Van der Zwan and Afonso, 2019). Moreover, by detecting a lack of a similar improvement among students who were administered the class

Received 20/06/2025 Accepted 09/12/2025

through VT, our study goes in a similar direction to those that expressed prudence about tailoring entire classes or sections of them around visual materials (Lieberfeld, 2007, p. 573; Inoue & Krain, 2014, p. 20). The FC format, with emphasis on the possibility to watch video-lectures at home and discuss doubts and unclear aspects of the class in the classroom with both the teacher and the classmates, proved helpful for students to consolidate their understanding of complex concepts and come up with ideas on how to apply them. The same cannot be said for the format based on VT.

Nevertheless, far from indicating a lack of usefulness in VT formats, this difference in students' grades and learning perception can indicate that dissimilar active teaching formats can be differently useful depending on the teaching goal or need. Several reasons can explain why the FC format proved more effective than VT for students' grades.

First, even though, as a teaching technique, FC is certainly more recent (Bergmann and Sams, 2012) than classroom projections of films and documentaries, that have been long used in various social sciences (Rose, 2016), the former rests on a larger tradition in terms of study about its design, implementation, and empirical assessment. This has produced large literature that aims to empirically test its strengths and limitations in terms of improving students' performance with both grades and soft skills. Even though it probably has a longer history, using films and documentaries has not led yet to the same production in terms of empirical analyses of its effectiveness for students' learning.

Second, the FC can be implemented only through a comprehensive re-organization of class time and space. This is due to its characteristics, based on removing frontal lecturing from the classroom to substitute it with video-lectures to be watched outside of class and with exercises and applications to be performed in the classroom under the teacher's supervision (Jenkins 2015, 607; Berge and Nederveld 2015, 163). This entails preparing contents that need to be put at students' disposal before class time and designing class exercises and activities based on the contents that students are supposed to have learned with the video-lectures. This way, class time can be valuably used to solve students' doubts and help them master applications of what they learned. In this regard, the FC can make use of or integrate a variety of teaching techniques, such as presentations, games, simulations, and visual materials. This tends to make the FC a comprehensive teaching methodology, and not just as a set of materials that can be used in a classroom. In a different way, while films and documentaries have been long used in classrooms, they are not yet recognised as an independent and self-sufficient teaching format. They

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should probably be seen as background materials to complement and support teaching, not only in its traditional, frontal lecturing format but also in any other format that aims to make student learning more active and engaging, including a FC. When an entire class or a section of it is reorganized in terms of watching films and documentaries for students, as in our study, it might not necessarily improve students' understanding and knowledge (Kiasatpour, 1999, p. 85; Lieberfeld, 2007, p. 573; Inoue & Krain, 2014, p. 20; Swimelar, 2013, p. 24; Brandle, 2020). This conclusion seems to hold when assessing students' performance through both a relatively more objective measurement, that is their grades, and a more subjective one, that is their learning perception. Previous analyses based on VT showed that films and documentaries can hinder students' learning perception as they do not always get to transmit to them the impression that fictional representations are useful to master complex academic concepts (Betti et al. 2024; Lieberfeld, 2007, p. 573; Inoue & Krain, 2014, p. 20; Swimelar, 2013, p. 24; Brandle, 2020).

Several studies have warned to be careful when taking on students' perceptions about the effectiveness of teaching formats at a face value (Deslauriers et al. 2019). Sometimes, students can have a hard time evaluating what and how much they have learned of a subject. Their perceptions could be related to "a number of different factors", including "novelty" that are not necessarily relevant in pedagogical terms (McNally et al. 2017, p. 292). Nevertheless, when dealing with learning, students' perceptions about what they learn and what they expect to learn are important. Perceptions can be deceiving, especially when they are not accompanied by some objective measurement of what students effectively learned. However, this is not a sufficient reason not to include them in an empirical analysis about the impact of active learning on their performance. If students are the main actors of the learning process, their perceptions are a relevant source of data to understand what formats can be effective at improving learning. Improving learning perception can be, thus, quite useful in a teaching process as it can have positive consequences on students' motivation and engagement.

With all this, this study does not suggest that the FC is necessarily better than VT for students' academic performance. For example, neither VT nor the FC enhanced other important students' soft skills, such as self-efficacy and teamwork. This result both diverges from studies that observed an improvement in students' performance about these types of skills (Whitman Cobb, 2016) and converges with others that did not find any significant difference between using one teaching format or another in terms of students' soft skills (Jenkins 2015, p. 610).

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These results, rather, lead us to the conclusion that, instead of seeing FC and VT, or any other active learning teaching format, as mutually exclusive or incompatible, future teaching approaches should be based on a complementary integration of different teaching strategies, techniques, and materials. Instead of making students' learning depend on a single teaching innovation, teachers should be ready to combine different techniques, depending on the goals and characteristics of each class (Jenkins 2015, p. 610; Betti et al. 2020; Betti et al., 2022). Different teaching formats can provide different advantages and benefits. This can foster distinct but equally meaningful learning processes. On the one hand, in an FC format, students can view the contents of lectures before class time. Based on those contents, they must perform exercises in class, under professor's supervision and in collaboration with classmates. This process can lead to a constructive and mutually reinforcing dialogue among students and between students and the professor, capable of generating deeper and enduring learning. On the other hand, in a VT format, students are required to study political and social phenomena through visual materials that they must analyse before class and through visual content that they must produce at home and present during class time. This also can create the conditions for an iterative dialogue among themselves and with the professor. Both formats can, thus, provide context for different but complementary learning processes, both potentially capable of producing meaningful learning.

Moreover, no active teaching format should aim to replace traditional elements of teaching, such as teachers' frontal lectures or students' notes. On the one hand, there are moments in a class in which the complexity of concepts might require frontal class lecturing. This can allow teachers to more precisely evaluate students' responses to explanations of specific concepts. On the other hand, when it is necessary to perform exercises to apply concepts or solve social and political problems, it can be more practical to ask students to study those concepts by watching a pre-recorded teacher's explanation at home and, then, come to class with hypotheses and ideas to be used in those exercises.

Without ignoring the difficulties to obtain this, ideally speaking, a classroom should be able to integrate different teaching strategies, techniques, and materials throughout the same year or semester (Betti et al. 2024; Betti et al. 2022). Depending on the necessity, this should include traditional frontal lecturing, pre-recorded video-lecturing, class exercises and activities, such as debates, presentations, and simulations, exams and assignments, and a combination of visual and non-visual materials, such as textbooks, notes, pictures, films, documentaries. In this regard,

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we think that there cannot be a "one-size-fits-all" format, satisfactory for all teaching contexts and necessities.

Conclusions, Limitations and Future Research

While the FC has been the object of a large literature aimed at empirically assessing its effects on students' learning, what we have so far about VT are mostly anecdotal descriptions of teaching implementations. The volume of empirical studies applied to the use of films and documentaries in PS or IR is still smaller than what one can find about the FC. More analyses are necessary to better understand the cognitive aspects of students' performance in which VT could be useful. This study aimed to contribute to this literature. Our tentative conclusion is that the FC should be considered a more complete and comprehensive teaching format that can help restructure class time and space in a way that maximizes the benefits of teaching and learning. VT through films and documentaries should be seen more as a teaching resource that can provide instructors with a large variety of visual materials to be used in class to complement the explanations of content or to manage evaluated activities, such as commentaries, debates, or small research projects, to be performed in class or at home. Upon reaching this conclusion, we are aware of the limitations of this study. It took place throughout a limited time span of only seven weeks. Moreover, it involved students with specific contextual characteristics, such as being enrolled in a private institution and coming from a similar upper-middle class socio-economic background. We are, thus, aware of the necessity to repeat the study with larger samples across longer time spans and to involve more randomly selected socio-economic backgrounds. However, we also think that this study provides a valuable starting point to comparatively assess the usefulness and effectiveness of different teaching formats based on active learning.

Future studies will need to provide more data to corroborate this conclusion. For example, they will need to further compare different teaching strategies to enhance our comprehension of the best aspects and practices that can be extracted by each of them, with the goal of productively integrating them into teaching. In addition, they should aim to understand the most effective solutions to evaluate student learning depending on the type of teaching format or technique applied. Finally, they should keep on devising research strategies to reliably include students' learning perceptions in the teaching process. This could entail the use of interviews, surveys, or focus groups. This would be useful to understand how different teaching formats can be adapted to the learning needs of different

Received 20/06/2025 Accepted 09/12/2025

students. Along these lines, it would be also important to examine the teachers' perceptions to understand how different teaching styles can suit different formats based on active learning. Due to the constant transformations that characterize the realms of teaching and learning, experimenting with applications and empirical assessments of classes based on FC, VT, and other potentially innovative teaching strategies remains the most effective way to enrich our understanding of improving students' learning.

As a conclusion, future studies should not only improve our empirical understanding of the effectiveness of teaching formats based on active learning, but also include in the debate their main pedagogical aspects. Future analyses should, for example, consider the importance of inclusivity for teaching. This entails evaluating whether teaching formats can guarantee equal access to technology, reduce the impact of socio-economic inequalities, and consider a diversity of learning needs. This is the only way to ensure that teaching formats can improve different students' profiles. This also requires universities to dedicate adequate financial and human resources to effectively implementing innovative teaching formats, so that teachers can acquire the competences to integrate them into their lectures. Along these lines, constantly examining teachers' and students' perceptions will be essential to identifying potential problems and devising solutions. For these goals to be achieved, universities will need to stimulate open and informed discussions based on partnerships and knowledge-based networks of teachers, educators, students, families, public and private institutions. Such networks will have to exchange the most appropriate teaching formats, multimedia resources, and digital tools capable of fostering students' learning.

Supplemental Materials

Supplemental materials for the quantitative analysis, together with the full list of films and documentaries used for the study, are not included for space reasons but they can be made available upon request.

Ethical Standards

The study received the authorization of the Teaching Innovation Evaluation Committee of the University where it took place. The Committee granted funds for the project "Implementation and assessment of Visual Thinking strategies in the Dual Degree in International Relations and Global Communications", for the academic period 2021-2023. Students agreed to participate in the study by filling in and signing a form. During the pro-

Received 20/06/2025 Accepted 09/12/2025

cess, they received full information about the research goals. Their personal data was not shared with any person or institution. Their participation was completely voluntary.

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