

Pupils' experimental activities

Union des Professeurs
de Physique et de Chimie
France

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become practicalholics?

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- **They are mandatory (LS, US) or highly recommended (Pr)**

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- They are in close relation to the weekly syllabus.
- They are written down in the curriculum at every level of teaching (Pr, LS, US)
- Mandatory (LS, US) or highly recommended (Pr)
- **Their general objectives are set out in the preambles to the curriculum. The experimental activity itself is designed to make the pupil get new skills and knowledge, related to any given topic (qualitative in LS, quantitative in US)**

Examples of objectives

- **General objectives**
- Specific to a session

General objectives

Why teaching through experimental activities?

- It allows the pupil faced with a questioning situation to answer it by devising an operating mode, carrying it out practically, going to and fro between the theory and the experiment, analysing the results.
- It allows the pupil to confront his representations with reality.
- It teaches the pupil to make observations and it stimulates his/her curiosity.
- It helps the pupil develop his own initiative, stick at what he is doing, and look at things critically.
- It allows the pupil to measure, consider the precisions of the data recorded, be aware of orders of magnitude.
- It helps the pupil taking in scientific laws, techniques, how to approach problems and ways of thinking.

Examples of objectives

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Acquiring knowledge and skills

EXEMPLES D'ACTIVITÉS	CONTENUS	CONNAISSANCES ET SAVOIR-FAIRE EXIGIBLES
<p>Observation du mouvement du centre d'inertie. Observation des mouvements des autres points (vidéos, chronophotographies...)*. Réalisation et exploitation d'enregistrements: table à coussin d'air, table à digitaliser, vidéos, capteurs chrono-cinés*... Détermination de vecteurs vitesses à partir d'enregistrements.</p>	<p>1 - Mouvement d'un solide indéformable</p> <p>1.1 Vecteur vitesse d'un point du solide 1.2 Centre d'inertie d'un solide 1.3 Mouvement de translation d'un solide 1.4 Mouvement de rotation d'un solide autour d'un axe fixe; vitesse angulaire</p>	<p><i>Sur un enregistrement réalisé ou donné, déterminer et représenter le vecteur vitesse V d'un point mobile</i></p> <p>Savoir que le vecteur vitesse V est le même pour tous les points d'un solide en translation. Savoir que chaque point d'un solide en rotation autour d'un axe fixe a une trajectoire circulaire. Pour un solide en rotation autour d'un axe fixe, relier la vitesse d'un point à la vitesse angulaire.</p>

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Acquiring knowledge and skills

Suggested activities	Content	Mandatory knowledge and skills
Determining velocities from a recorded motion	1.3 Translation of a solid 1.4 Rotation of a solid about a fixed axis. Angular speed.	<i>Determining and representing the velocity from a recorded or pre-recorded motion.</i> Knowing that velocity is the same for all points of a solid in translation. Knowing that every point of a rotating solid has a circular motion. Knowing the relation between the linear speed of a point and the angular speed.

End of studies examination

- Recent (3 years in physics and chemistry)
- Called for by UdPPC since 1988
- Individual 1 hour examination
- Mainly based on measuring skills and direct use of the data
- Ensures actual and regular experimental practice in the classroom all year long

Our questions about experimental activities

- What does a child learn when he/she experiments? and how?
- Are the objectives of experiments specific to these activities, or can they be met through other activities?
- How can we train teachers better to design and supervise experimental activities?
- What can be assessed in these activities ? and how?